AMETEK®
DREXELBROOK

Leader in
Level Measurement

Installation and Operating Instructions

IntelliPoint RF Series
Two-Wire Point Level Switch

> ***NOTICE:*** *The AutoVerify™ feature in The IntelliPoint™ switch is shipped DISABLED. For critical High Level applications we recommend enabling the AutoVerify™ feature. See Section 2.5.6*

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Two-Wire Point Level Switch

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An ISO 9001 Certified Company

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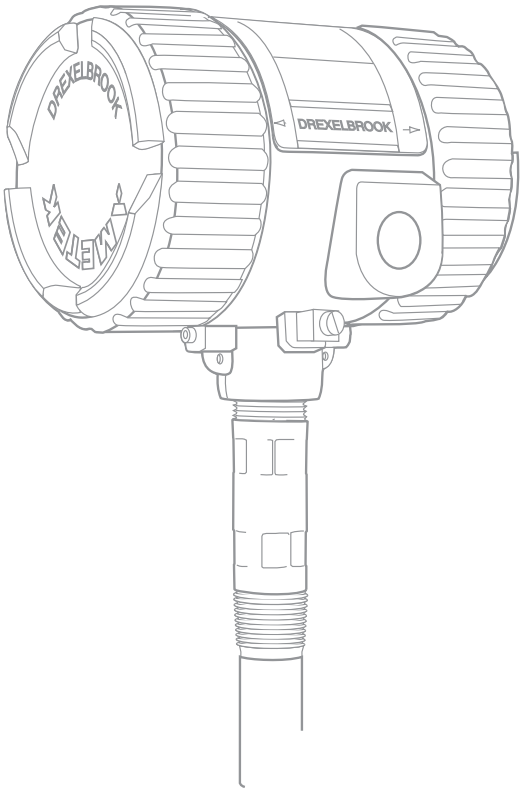

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Section 1

Section 1: Introduction

1.1 System Description

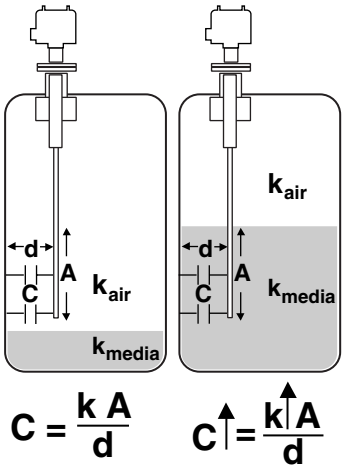


Figure 1-1

Simple Capacitance Probe (Insulating Media Shown)

The AMETEK Drexelbrook **IntelliPoint™** Series uses **No-Cal™** technology to detect the presence or absence of material without calibration or initiation via setpoint adjustments, push-buttons, or magnets.

Installation is simple and easy. Simply apply power and the IntelliPoint system is ready to detect the presence or absence of material. Since the IntelliPoint instrument does not require calibration or setpoint adjustments, it is capable of operating in non-dedicated tanks regardless of the material being measured.

Notice: Material to be Measured Must Be Below Sensor when Power is Applied.

The **AutoVerify™** self-testing function continuously monitors the entire system to ensure proper operation. **Manual Certify™** changes the outputs in order to test the loop current and ensure proper operation of the control systems.

1.2 Technology

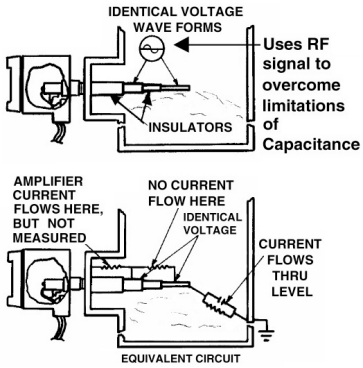

IDENTICAL VOLTAGE WAVE FORMS
Uses RF signal to overcome limitations of Capacitance
INSULATORS
AMPLIFIER CURRENT FLOWS HERE, BUT NOT MEASURED
NO CURRENT FLOW HERE
IDENTICAL VOLTAGE
CURRENT FLOWS THRU LEVEL
EQUIVALENT CIRCUIT

Figure 1-2

RF Admittance Probe with Cote-Shield

In a simple capacitance probe-type sensing element, when the level rises and material covers the probe, the capacitance within the circuit between the probe and the media (conductive applications) or the probe and the vessel wall (insulating applications) increases. This is due to the dielectric constant (k) of the material, which causes a bridge mis-balance. The signal is demodulated (rectified), amplified, and the output is increased. There are drawbacks, however, especially when there is coating of the probe.

An RF Admittance level transmitter is the next generation. Although similar to the capacitance concept, IntelliPoint employs a radio frequency signal and adds the Cote-Shield™ circuitry within the Electronics Unit.

This patented Cote-Shield™ circuitry is designed into the IntelliPoint series and enables the instrument to ignore the effect of buildup or material coating on the sensing element. The sensing element is mounted in the vessel and provides a change in RF admittance indicating presence or absence of material.

The Cote-Shield element of the sensor prevents the transmission of RF current through the coating on the sensing element. The only path to ground available for the RF current is through the material being measured.

The result is an accurate measurement regardless of the amount of coating on the probe, making it by far the most versatile technology, good for very wide range conditions from cryogenics to high temperature, from vacuum to 10,000psi pressure, and works with all types of materials.

1.3 Model Number

IntelliPoint RF ™

Technology

R RF Admittance

Measurement Type

N	No Calibration (Standard)	**T**	10pf Auto Calibration
M	Manual Setpoint Adjustment	**V**	10pf Fixed
H	High Sensitivity	**H**	High Sensitivity .5 pf Fixed
G	High Sensitivity Manual Setpoint Adjustment	**R**	High Sensitivity
L	Standard Auto Calibration		

Input

T Two wire Power Supply, 13-30 Vdc

Housing

0	No Approvals, NEMA 4X/IP66, M20 X 1.5 conduit entries
1	No Approvals, NEMA 4X/IP66, ¾" NPT conduit entries
2	ATEX Approved, NEMA 4X/IP66, M20 X 1.5 conduit entries
3	FM / FMc Approved, NEMA 4X/IP66, ¾" NPT conduit entries
5	No Approvals, NEMA 4X/IP66, M20 X 1.5 conduit entries, Dual Seal, Perm-a-Seal sensors – only
6	No Approvals, NEMA 4X/IP66, ¾" NPT conduit entries, Dual Seal, Perm-a-Seal sensors – only
7	FM / FMc Approved, NEMA 4X/IP66, ¾" NPT conduit entries, Dual Seal, Perm-a-Seal sensors – only
9	No Approvals, NEMA 4X/IP66, M20 X 1.5 conduit entries, Dual Seal, Non Perm-a-Seal sensors – only
A	No Approvals, NEMA 4X/IP66, ¾" NPT conduit entries, Dual Seal, Non Perm-a-Seal sensors – only
B	FM / FMc Approved, NEMA 4X/IP66, ¾" NPT conduit entries, Dual Seal, Non Perm-a-Seal sensors – only

Electronics

0	Integral	**7**	Rmt. w/ (25 ft.) Tri-Ax Cable	**E**	Rmt. w/ (75 ft.) 1st 10ft Hi-Temp. Cbl.
1	Remote, no cable	**8**	Rmt. w/ (50 ft.) Tri-Ax Cable	**F**	Rmt. w/ (5 ft.) G.P. Cable
2	Rmt. w/ 3 m (10 ft.) G.P. Cable	**9**	Rmt. w/ (75 ft.) Tri-Ax Cable	**G**	Rmt. w/ (5 ft.) Tri-Ax Cable
3	Rmt. w/ 7.6 m (25 ft.) G.P. Cable	**A**	Rmt. w/ (10 ft.) Hi-Temp. Cable	**H**	Rmt. w/ (10 ft.) Tri-Ax Cable
4	Rmt. w/ 10.6 m (35 ft.) G.P. Cable	**B**	Rmt. w/ (25 ft.) 1st 10ft Hi-Temp. Cbl.	**J**	Rmt. w/ (35 ft.) Tri-Ax Cable
5	Rmt. w/ 15.2 m (50 ft.) G.P. Cable	**C**	Rmt. w/ (35 ft.) 1st 10ft Hi-Temp. Cbl.	**K**	Rmt. w/ (5 ft.) Hi-Temp. Cable
6	Rmt. w/ 23 m (75 ft.) G.P. Cable	**D**	Rmt. w/ (50 ft.) 1st 10ft Hi-Temp. Cbl.		

Output

0 8-16 mA Output

Sensing Element

	Application	Sensing Element	Pressure/Temperature	Wetted Parts
00	General purpose	700-1202-001 remote 700-1202-021 integral	13.8 bar @ 232°C (200 PSI @ 450°F)	316SS and PEEK
01	Floating roof with cable attachment and brass bottom weight	700-1202-012 remote 700-1202-022 integral	13.8 bar @ 232°C (200 PSI @ 350°F)	316SS, Brass, and PEEK
02	General purpose, longer insertion lengths with cable attachment and 316SS bottom weight	700-1202-014 remote 700-1202-024 integral	13.8 bar @ 232°C (200 PSI @ 350°F)	316SS and PEEK
03	Proximity	700-1202-018 remote 700-1202-028 integral	13.8 bar @ 232°C (200 PSI @ 450°F)	316SS and PEEK with 76 mm (3) 316SS proximity plate
04	General purpose, high temperature and pressure	700-1202-041 remote 700-1202-042 integral	69 bar @ 121°C (1000 PSI @ 250°F) 20.7 bar @ 232°C (300 PSI @ 450°F)	316SS and PEEK
06	General purpose with FDA approved materials of construction	700-1202-031 remote 700-1202-032 integral	13.8 bar @ 232°C (200 PSI @ 450°F)	316SS and FDA grade PEEK
07	General purpose Granular materials	700-1202-010 remote 700-1202-020 integral	13.8 bar @ 232°C (200 PSI @ 450°F)	316SS and PEEK with 7/8 inch dia. 316SS collar
09	General purpose Granular materials with FDA approved materials of construction	700-1202-033 remote 700-1202-034 integral	13.8 bar @ 232°C (200 PSI @ 450°F)	316SS and FDA grade PEEK with 7/8 inch dia. 316SS collar
10	Corrosive liquids (2)(4)(9)	700-0001-018 remote	3.4 bar @ 149°C (50 PSI @ 300°F)	PFA
11	General purpose, higher pressure TFE compatibility required	700-0201-005 int/rem	69 bar @ 38°C (1000 PSI @ 100°F) 34.5 bar @ 149°C (500psi @ 300°F)	316SS and TFE
12	Corrosive material, higher pressure	700-0201-005 int/rem Hastelloy C	69 bar @ 38°C (1000 PSI @ 100°F) 34.5 bar @ 149°C (500psi @ 300°F)	Hastelloy C and TFE
14	General Purpose, low pressure	700-0202-002 int/rem	3.4 bar @ 149°C (50 PSI @ 300°F) 1.4 bar @ 232°C (20 PSI @ 450°F)	316SS and TFE
15	Heavy duty, agitated tanks or material with high bulk density (1)	700-0202-043 remote	69 bar @ 38°C (1000 PSI @ 100°F) 34.5 bar @ 149°C (500psi @ 300°F)	316SS and TFE
16	High Integrity Seal for Hazardous Materials	700-0002-360 int/rem	34.5 bar @ 149°C (500 PSI @ 300°F)	PFA
18	Corrosive material, higher pressure with waterlike viscosity (4)	700-0001-022 int/rem	69 bar @ 38°C (1000 PSI @ 100°F) 34.5 bar @ 149°C (500 PSI @ 300°F)	TFE
19	Interface Measurement	700-0002-023 int/rem	69 bar @ 38°C (1000 PSI @ 100°F) 34.5 bar @ 149°C (500 PSI @ 300°F)	316SS and TFE
20	Miniature Pilot Plant Sensor (1)(7)	700-0209-002 remote	6.9 bar @ 121°C (100 PSI @ 250°F) 0 bar @ 232°C (0 PSI @ 450°F)	316 SS and TFE

Continued on Following Page

1.3 Model Number (Continued)

Continued from Previous Page

Fly Ash Precipitators, Baghouse, and Economizers (1) (6)

	Application	Sensing Element	Pressure/Temperature	Wetted Parts
31	No hopper Installation	700-0029-001 remote	0.1 bar @ 260°C (2 PSI @ 500°F)	316SS and TFE
32	Hopper Installation up to 200mm (8 inches)	700-0029-002 remote	0.1 bar @ 260°C (2 PSI @ 500°F)	316SS and TFE
33	Hopper Installation up to 406mm (16 inches)	700-0029-003 remote	0.1 bar @ 260°C (2 PSI @ 500°F)	316SS and TFE
34	Hopper Instalation up to 521mm (20.5 inches)	700-0029-004 remote	0.1 bar @ 260°C (2 PSI @ 500°F)	316SS and TFE
35	Hopper Installation up to 635mm (25 inches)	700-0029-005 remote	0.1 bar @ 260°C (2 PSI @ 500°F)	316SS and TFE

Plugged Chute Detection (1) (5)

	Application	Sensing Element	Pressure/Temperature	Wetted Parts
50	Flush Mount Sensor 305mm^2 (12 inches^2) heavy duty	700-0207-001 remote	0.1 bar @ 82°C (1 PSI @ 180°F)	304 SS and Polyurethane
51	Flush Mount Sensor 305mm^2 (12 inches^2) higher temperature	700-0207-002 remote	0.1 bar @ 149°C (1 PSI @ 300°F)	304 SS and TFE
52	Flush Mount Sensor 305mm^2 (12 inches^2) with curved radius 153, 229, 305 mm (6, 9, or 12 inches)	700-0207-003 remote	0.1 bar @ 82°C (1 PSI @ 180°F)	304 SS and Neoprene
53	Flush Mount Sensor 305mm^2 (12 inches^2) extra heavy duty	700-0207-004 remote	0.1 bar @ 82°C (1 PSI @ 180°F)	410 SS and UHMW Polyethylene
55	Flush Mount Sensor 203mm^2 (8 inches^2) heavy duty	700-0207-006 remote	0.1 bar @ 82°C (1 PSI @ 180°F)	304 SS and Polyurethane

High Pressure / High Temperature (1)

60	High Pressure & Temp.	700-0204-038 remote	137.9 bar @ 93°C (2000 PSI @ 200°F) 68.9 bar @ 260°C (1000 PSI @ 500°F)	316SS and Ceramic
61	High Temperature	700-0204-002 remote	0 bar @ 816°C (0 PSI @ 1500°F)	316SS and Ceramic
62	High Pressure & Temp.	700-0204-048 remote	275.8 bar @316°C (4000 PSI @ 600°F)	316SS
ZZ	Sensing Element **Not Listed**			

Mounting Type (See separate Mounting Chart for first three digits)

	IL	CSL		IL	CSL
xxx1	457 mm (18")	152 mm (6")	xxxG	457 mm (18")	0 mm (0")
xxx2	305 mm (12")	152 mm (6")	xxxH	914 mm (36")	254 mm (10")
xxxA	152 mm (6")	51 mm (2")	xxxJ	914 mm (36")	0 mm (0")
xxxB	305 mm (12")	51 mm (2")	xxxK	1219 mm (48")	254 mm (10")
xxxC	305 mm (12")	89 mm (3.5")	xxxL	1524 mm (60")	254 mm (10")
xxxD	457 mm (18")	51 mm (2")	P00X	IL/CSL Other	
xxxE	457 mm (18")	89 mm (3.5")	A1BX	IL/CSL factory set for Fly Ash	
xxxF	457 mm (18")	254 mm (10")	xxxZ	Other	

R		T			0		

Not all mounting options available with all sensing elements

Notes: CSL (Cote-Shield Length) should extend through Nozzle + Typical "Wall Buildup" + 2 Inches

(1) Available with remote electronics only
(2) Use A1P mounting option
(3) Choose only sanitary mounting options
(4) Available with 0-inch CSL only
(5) Use P00X mounting option
(6) Use A1B mounting option
(7) Use A8B mounting option (¼-inch NPT)
(8) Choose from flange mounting only
(9) FM approved with remote electronics only

NPT Threads

A1B	¾"NPT	316SS	**A2B**	1"NPT	316SS
A1C	¾"NPT	Hastelloy C	**A2C**	1"NPT	Hastelloy C
A1P	¾"NPT	PFA			

DIN Flanges

E01	25 mm	16 bar	RF 316/316L SS	**E02**	25 mm	16 bar	RF CS
EP1	25 mm	40 bar	RF 316/316L SS	**EP2**	25 mm	40 bar	RF CS
EQ1	50 mm	16 bar	RF 316/316L SS	**EQ2**	50 mm	16 bar	RF CS
ER1	50 mm	40 bar	RF 316/316L SS	**ER2**	50 mm	40 bar	RF CS
ES1	80 mm	16 bar	RF 316/316L SS	**ES2**	80 mm	16 bar	RF CS
ET1	80 mm	40 bar	RF 316/316L SS	**ET2**	80 mm	40 bar	RF CS
EU1	100 mm	16 bar	RF 316/316L SS	**EU2**	100 mm	16 bar	RF CS
EV1	100 mm	40 bar	RF 316/316L SS	**EV2**	100 mm	40 bar	RF CS
EW1	150 mm	16 bar	RF 316/316L SS	**EW2**	150 mm	16 bar	RF CS
EX1	150 mm	40 bar	RF 316/316L SS	**EX2**	150 mm	40 bar	RF CS

Sanitary TriClamps

C2B	1"TriClamp	316SS	**C4B**	2"TriClamp	316SS
C3B	1½"TriClamp	316SS			

ANSI Flanges

DA1	1"	150#	RF 316/316L SS	**DA2**	1"	150#	RF CS
DB1	1½"	150#	RF 316/316L SS	**DB2**	1½"	150#	RF CS
DC1	2"	150#	RF 316/316L SS	**DC2**	2"	150#	RF CS
DD1	2½"	150#	RF 316/316L SS	**DD2**	2½"	150#	RF CS
DE1	1"	300#	RF 316/316L SS	**DE2**	1"	300#	RF CS
DF1	1½"	300#	RF 316/316L SS	**DF2**	1½"	300#	RF CS
DG1	2"	300#	RF 316/316L SS	**DG2**	2"	300#	RF CS
DH1	2½"	300#	RF 316/316L SS	**DH2**	2½"	300#	RF CS
DI1	3"	150#	RF 316/316L SS	**DI2**	3"	150#	RF CS
DJ1	3"	300#	RF 316/316L SS	**DJ2**	3"	300#	RF CS
DK1	4"	150#	RF 316/316L SS	**DK2**	4"	150#	RF CS
DL1	4"	300#	RF 316/316L SS	**DL2**	4"	300#	RF CS
DM1	6"	150#	RF 316/316L SS	**DM2**	6"	150#	RF CS
DN1	6"	300#	RF 316/316L SS	**DN2**	6"	300#	RF CS

1.4 Dual Compartment Housing Detail

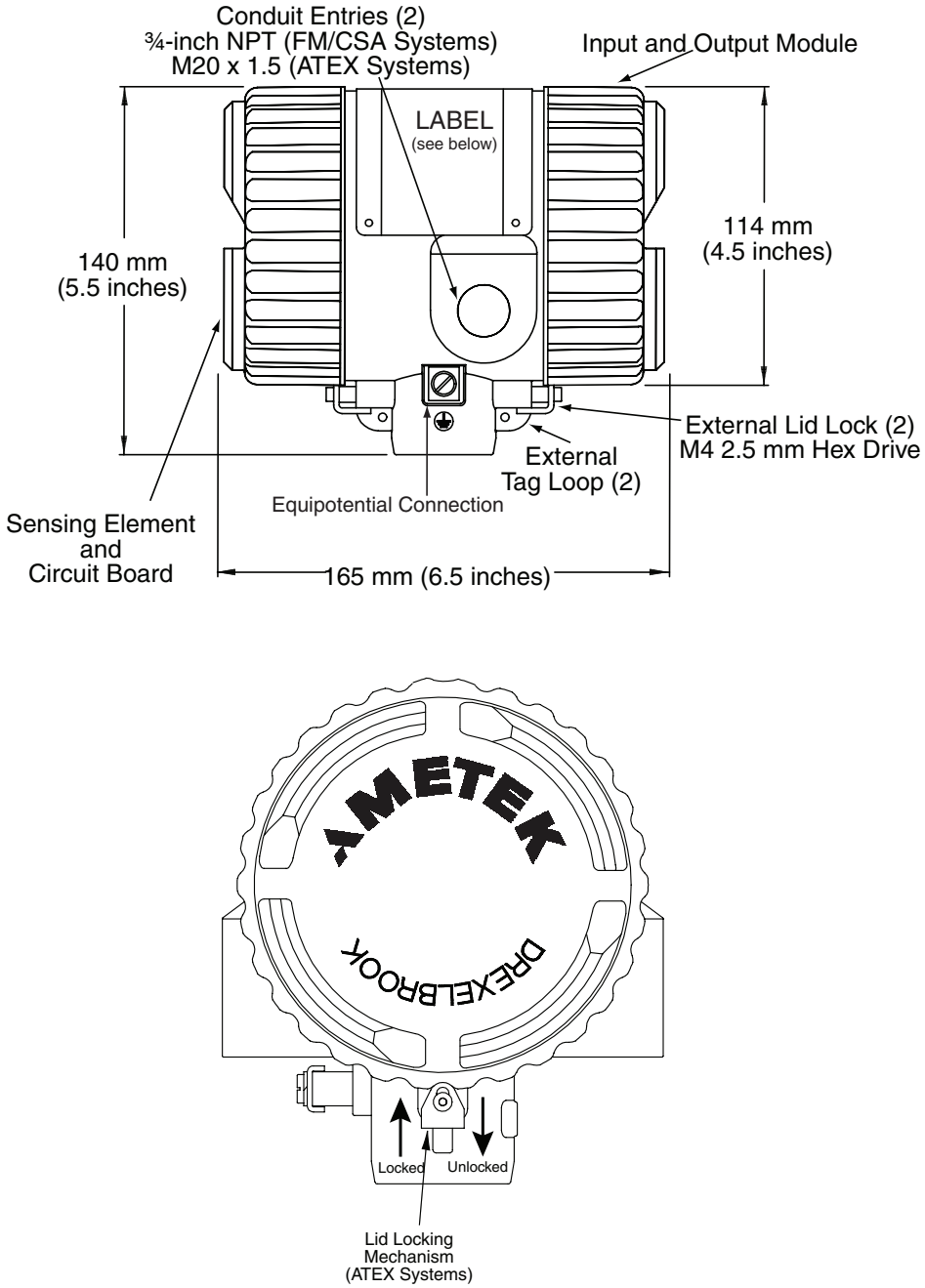


Figure 1-3
Dual Compartment Housing Detail

NOTICE

The Input/Output Module (IOM) is located on Customer Connection side; sensing element/circuit board are on opposite side.

Section 2: Installation

2.1 Unpacking

Carefully remove the contents of the shipping carton and check each item against the packing list before destroying any packing material. If there is any shortage or damage, report it to the factory immediately.

2.2 Mounting and Installation Guidelines

CAUTION:
The IntelliPoint RF instrument must be powered AFTER it is installed in the application and with material BELOW the sensing element.

The IntelliPoint RF instrument can be mounted vertically or horizontally at any angle. The mounting location should be as free as possible from vibration, corrosive atmospheres, and any possibility of mechanical damage. Ambient temperatures at electronics should be between -30°C to 70°C (-22°F to 158°F).

The IntelliPoint RF instrument uses a dual compartment housing and a completely encapsulated input/output module to reduce the possibility that damage may occur from water migrating into the housing through the conduit. To further reduce the possibility of damage caused by water in the conduit, install a drip loop and breather drain to purge any accumulating moisture. ***See to Figure 2-1***.

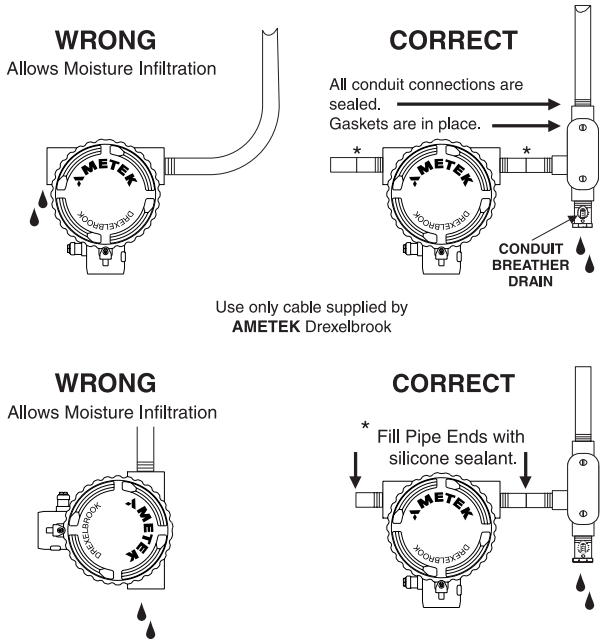


Figure 2-1
Recommended Conduit Connection

2.2 Mounting and Installation Guidelines (Continued)

After system is installed and level is **below** sensing element, apply power. The RF Series instrument does not require any calibration or setpoint adjustments and is ready to detect change in level. If properly installed, the green LED lights when power is applied. The Red LED should not be flashing. If the Red LED is flashing, refer to ***Section 4: Troubleshooting.***

NOTICE

Cable fittings supplied are weather-resistant. They are NOT certified as explosion-proof (XP) or flameproof (d) unless they are specifically marked.

The IntelliPoint RF instrument is rated Intrinsically Safe (I.S.) when power is provided from an I.S. supply.

WARNING:

IntelliPoint RF equipment is rated explosion-proof. When installing in explosion hazardous areas [rated "potentially hazardous" (EU) or "hazardous classified" (USA)] observe all national and local regulations as well as specifications in the certificate.

Mount sensing element using the following installation guidelines. ***See Figure 2-2.***

When installing IntelliPoint RF instrument, ambient temperature at electronics must not exceed 70°C (158°F).

When installing flange-mounted sensing elements, keep mating surfaces and bolts free of paint and corrosion to ensure proper electrical contact with vessel. Avoid using excessive amounts of Teflon™ tape when installing threaded sensing elements.

Install systems with threaded NPT connection via wrench flats on the process connection ONLY.

Locate sensing element to avoid enhancing electrostatic discharge from process medium, as is good practice with any thermowell, displacer, or sampler. This includes correct bonding to the tank or silo wall.

If installation area is rated explosion-proof and requires conduit seal fittings, they should be used in accordance with company standards and local codes.

2.2 Mounting and Installation Guidelines (Continued)

Mounting sensing element inside a pipe is not recommended.

Do not mount a Cote-Shield sensing element through a nozzle that exceeds length of first insulator.

Ensure that there are no obstructions or agitator blades to interfere with sensing element.

Rigid sensing elements can be mounted either vertically or horizontally.

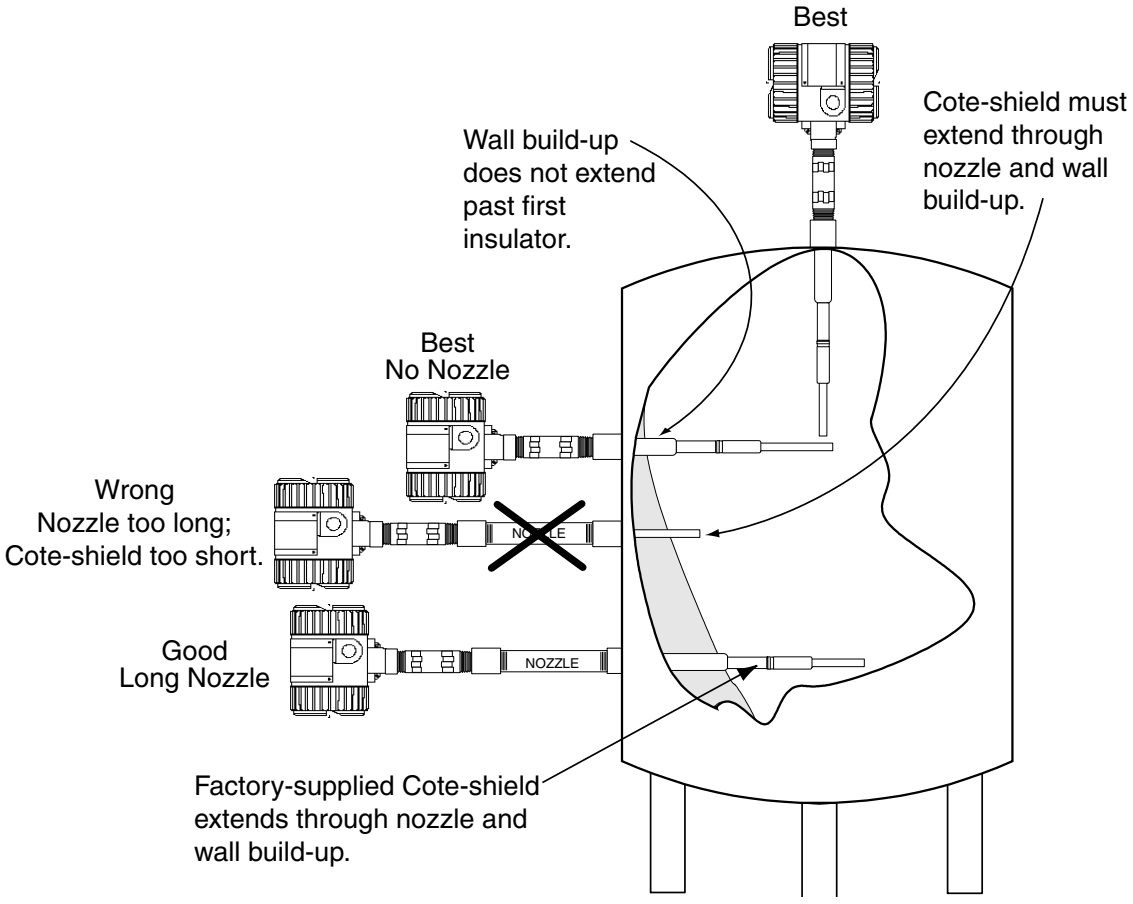
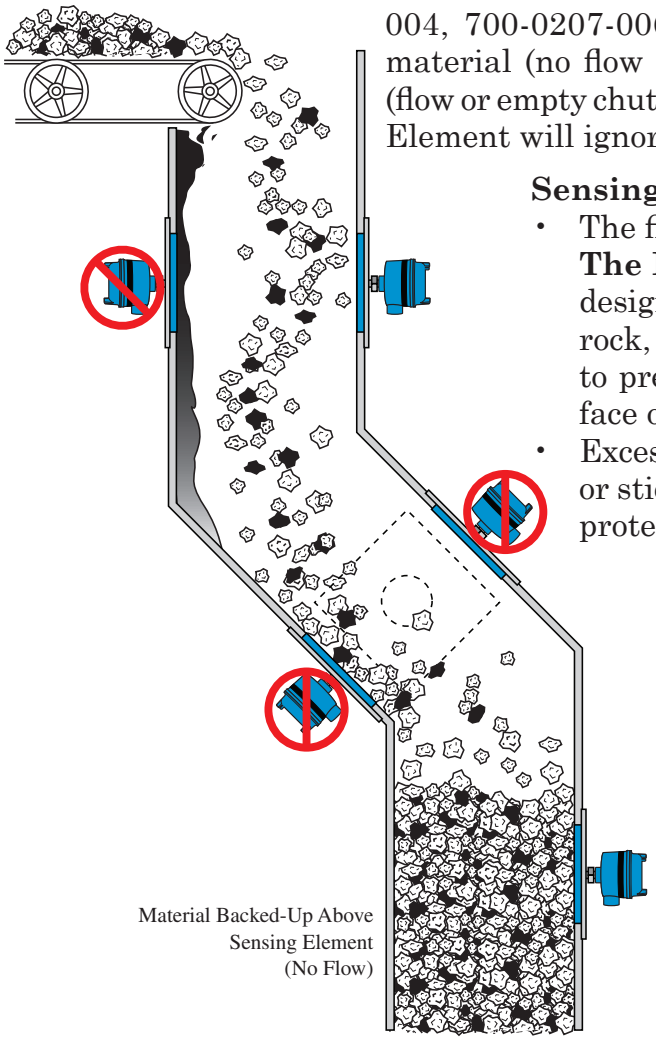


Figure 2-2
Installation Considerations

2.3 Installation of Flush-Mounted Sensing Elements



Material Backed-Up Above Sensing Element (No Flow)

These instructions apply to all flush on/off sensing elements, models 700-0207-001, 700-0207-002, 700-0207-003, 700-0207-004, 700-0207-006. These systems will sense presence of material (no flow or plugged chute) and absence of material (flow or empty chute) at the sensing element. The Flush Sensing Element will ignore free falling material.

Sensing Element at the Top of a Chute.

- The flush sensing element should be mounted **In The Flow Stream**. These sensing elements are designed and built to withstand the impact of coal, rock, wood, chips, etc. This location is important to prevent excessive build up of material on the face of the sensing element.
- Excessive build up, typically consisting of wet and/or sticky fines, can occur if the sensing element is protected from falling material.

Sensing Element in an angle chute.

- Do not mount on the top or bottom.
- Best mounted on either side

Sensing Element at the Bottom

- Mount on any side.
- Low-Level sensors can be used to detect a plug or to insure that a seal is present (chute is full at this point).

2.4 Input Wiring

WARNING:
If IntelliPoint instrument is located in a hazardous environment, do not open the enclosure cover or make/break any electrical connections without first disconnecting electrical power at the source. Ensure that the wiring, electrical fittings and conduit connections conform to electrical codes for the specific location and hazard level.

The IntelliPoint RF instrument requires a 13-30 Vdc supply to operate. To access, remove the housing lid on the customer connections side to reveal the Input/Output Module **(IOM)**. The IOM is an encapsulated assembly that contains the power supply, outputs and eight wiring terminals. IOM is held in place with three screws. ***See Figure 2-3***.

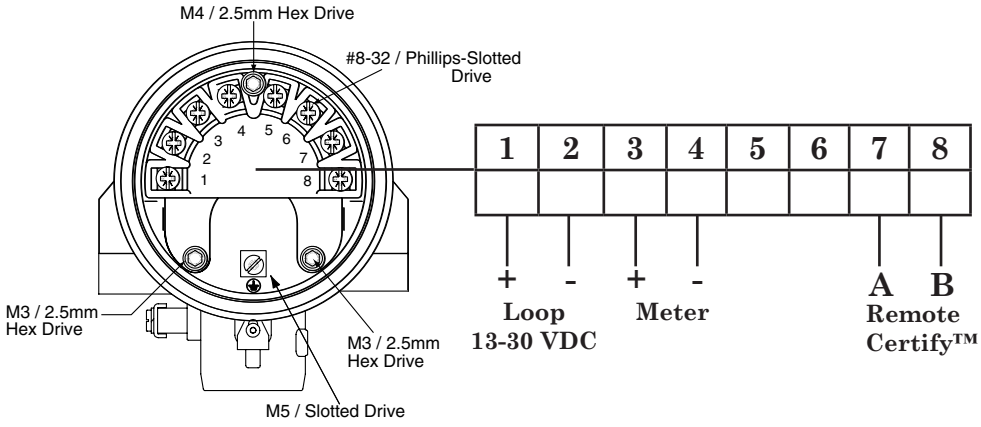

M4 / 2.5mm Hex Drive
#8-32 / Phillips-Slotted Drive
1 2 3 4 5 6 7 8
M3 / 2.5mm Hex Drive
M3 / 2.5mm Hex Drive
M5 / Slotted Drive
1 2 3 4 5 6 7 8
+ - + -
Loop 13-30 VDC
Meter
A B
Remote Certify™

Figure 2-3
Input Wiring

2.5 Spark Protection

Applications involving insulating granulars and insulating liquids may produce a static discharge that can damage the electronics. The RF series instrument is supplied with integral heavy-duty spark protection to prevent static discharges from damaging the electronic circuits.

2.6 Circuit Board

The circuit board is located on the sensing element/circuit side of the housing (marked on label). Remove the housing lid to access the status LEDs, time delay adjustment, and configuration jumpers. ***See Figure 2-4***.

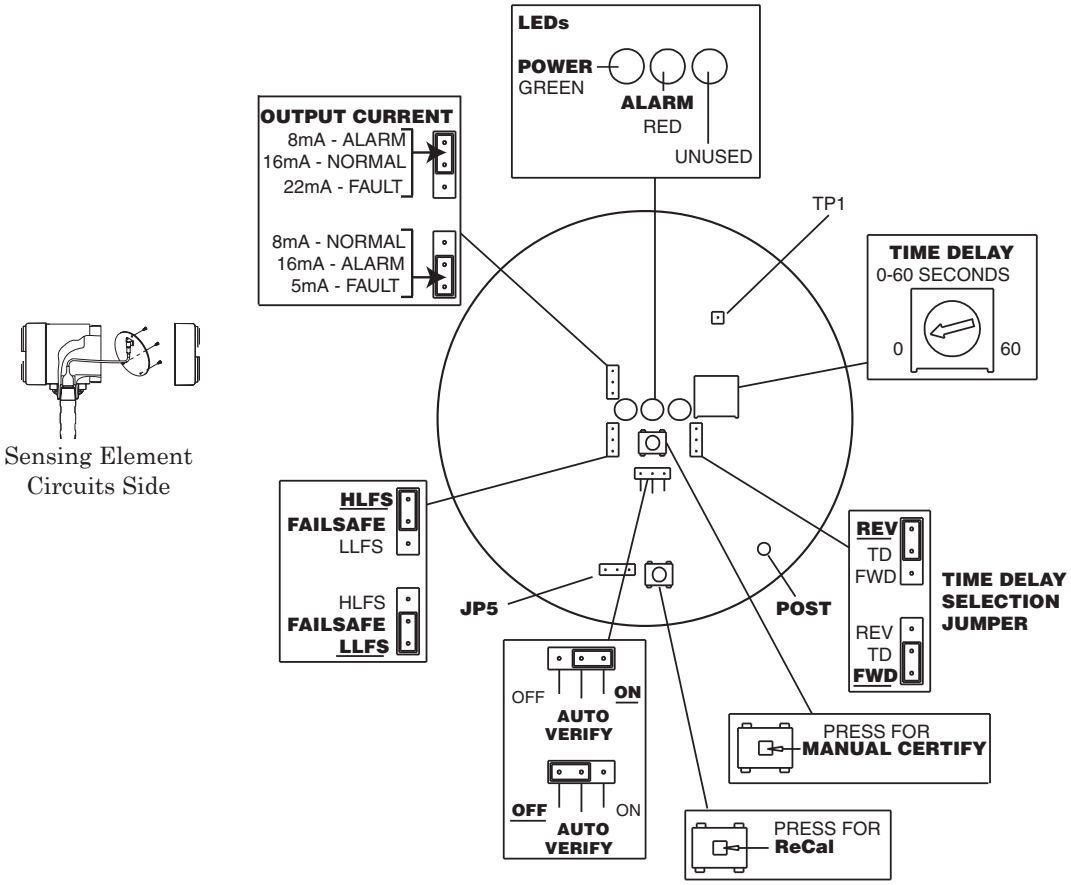


Figure 2-4
Circuit Board

NOTICE

Do **NOT** push the ReCal button without first ensuring the material being measured is below the sensing element

2.6.1 Time Delay

The "Time Delay" adjustment is located on the sensing element/ circuit board side of the housing (marked on label). It is used to help stop an oscillating current output due to agitation or waves in the vessel. The time delay adjustment can be field adjusted from 0 to 60 seconds. The unit is shipped with the Time Delay set to zero (0) seconds.

The Time Delay adjustment is a 270-Degree turn pot and is at zero seconds when in the full counter-clockwise position. Do not force the pot past the stop or damage will occur.

2.6.2 Time Delay Action

"Time Delay Action" describes if loop current is delayed from going into alarm state or recovering after an alarm state.

- The Time Delay Action is field-selectable using the TD jumper on sensing element side of the housing.
- **FWD**: delays system from coming out of alarm.
- **REV**: delays system from going in alarm.
- The instrument is supplied with time delay action set in forward mode (**FWD**) position.

2.6.3 Failsafe

"Failsafe" describes the level condition that causes the transmitter to go into alarm.

- The Failsafe is field-selectable using a jumper located on the sensing element/circuit board side of the housing.
- High Level Failsafe (**HLFS**): When the probe is covered, the unit is in alarm.
- Low Level Failsafe (**LLFS**) When the probe is uncovered, the unit is in alarm.
- The instrument is supplied with the failsafe jumper set in high level (**HLFS**) position.

2.6.4 Current Output Assignment

The Output Current can be configured using the jumpers as follows:

- Jumper on pin #1 and #2:
  8mA - Alarm, 16mA - Normal, 22mA - Fault
- Jumper on pin #2 and #3:
  8mA - Normal, 16mA - Alarm, 5mA - Fault

2.6.5 Manual / Remote Certify™

The "Certify" test feature performs a confidence test of the system by duplicating the same signal as a high-level alarm condition without requiring the system to be removed from the tank. Simulating a high level with the Manual/Remote Certify feature:

- Checks the AutoVerify™ and system circuits to ensure proper operation.
- Checks the integrity and continuity of the wiring connections.
- Verifies that the sensing element is working properly.

The "**Manual Certify**" test is initiated with the press of the Manual Certify Button located on the sensing element / circuit side of the housing.

The "**Remote Certify**" test is initiated by creating a momentary short between contacts 7 and 8 located on the power supply side of the housing. This can be done with a push button or relay closure.

After initializing the Certify test, the green LED flashes for 5 seconds and the red LED will illuminate. The current moves to the alarm condition for 2 seconds. If the red LED does not turn on, and the current does not move to the alarm condition, the Certify has detected a fault.
Consult Section 4: Troubleshooting.

Certify feature operates when system is configured for HLFS.

CAUTION:
Unlike the previous AMETEK Drexelbrook Two Wire Point level Product (LCT), the IntelliPoint Two Wire Point Level Switch is designed with on board "AutoVerify" integrity testing. As such, it requires special instructions to be used with previous versions of AMETEK Drexelbrook receivers and cannot be used with some receiver versions. ***Please refer to Table 2-1.***

2.6.5 Manual / Remote Certify™ (Continued)

Receiver Model Number	Description	Use with IntelliPoint	Comments
401-4X0-001 Series	Single Channel Receiver	**OK**	
401-4X1-001 Series	Single Channel Receiver with Manual Verify Push Button	**OK** - Conditional: Activating Manual Verify on receiver will have NO effect.	To initiate Manual Certify, operator must press manual certify button on IntelliPoint circuit board or, by customer-supplied contact closure attached to terminals 7 & 8.
401-4X3-001 Series	Single Channel Receiver with Manual Verify Magnetic Key	**OK** - Conditional: Activating Manual Verify on receiver will have NO effect.	To initiate Manual Certify, operator must press manual certify button on IntelliPoint circuit board or, by customer-supplied contact closure attached to terminals 7 & 8.
401-4X4-001 Series	Single Channel Receiver with AutoVerify	**Can Not Be Used With Intellipoint.**	Consult Factory
401-3100 Series 401-3800 Series	6 Channel Receiver	**OK** - Conditional: Activating Manual Verify on receiver will have NO effect.	To initiate Manual Certify, operator must press manual certify button on IntelliPoint circuit board or, by customer-supplied contact closure attached to terminals 7 & 8.
401-3400 Series	6 to 24 Channel Receiver	**OK** - Conditional: Activating Manual Verify on receiver will have NO effect.	To initiate Manual Certify, operator must press manual certify button on IntelliPoint circuit board or, by customer-supplied contact closure attached to terminals 7 & 8.
LCR-3200 Series Models 601-30XX-XXX	8-32 point receiver	**OK**	
LCR-3200 Series Models 601-31XX-XXX	8-32 point receiver	**OK** - Conditional: If with optional Manual Verify buttons, activating Manual Verify on receiver will have NO effect.	To initiate Manual Certify, operator must press manual certify button on IntelliPoint circuit board or, by customer-supplied contact closure attached to terminals 7 & 8.
LCR-3200 Series Models 601-320X-XXX	8-32 point receiver	**OK** - Conditional: Activating Manual Verify on receiver will have NO effect.	To initiate Manual Certify, operator must press manual certify button on IntelliPoint circuit board or, by customer-supplied contact closure attached to terminals 7 & 8.
LCR-3200 Series Models 601-321X-XXX	8-32 point receiver	**OK** - Conditional: Turn off AutoVerify feature. Activating Manual Verify on receiver will have NO effect.	To initiate Manual Certify, operator must press manual certify button on IntelliPoint circuit board or, by customer-supplied contact closure attached to terminals 7 & 8.

Table 2-1
Receiver Versions

2.6.6 AutoVerify™

"AutoVerify" is a self-testing function that continuously checks the system for proper operation when the unit is in the High Level Failsafe (**HLFS**) mode and in normal condition.

- AutoVerify is field-selectable using a jumper located on the sensing element side of the housing.
- **On**: If a fault is detected during the AutoVerify cycle, both LEDs will flash alternately, and the current will go to the fault output of 5mA or 22mA. ***See Section 2.5.4***
- **Off**: The AutoVerify self-testing function is not active.
- The instrument is supplied with the AutoVerify jumper set in the off position.

NOTICE

The AutoVerify™ feature in The IntelliPoint™ switch is shipped DISABLED. For critical High Level applications we recommend enabling the AutoVerify™ feature.

AutoVerify Criteria

1. AutoVerify feature must be enabled.

2. The sensor must generate an uncovered capacitance value greater than 2 pF. Typically, the active sensor length (active length = insertion length – cote shield length) must be greater than 8 inches (200 mm).

3. Consult Factory for specialty sensors that may be available for shorter length requirements.

4. Sensors that do not meet the above requirement can perform reliably for level measurement detection, and will pass AutoVerify / Manual Certify tests, but will not be able to detect a sensor that is, or has become, electrically disconnected from the transmitter.

2.6.7 Re-Calibration

NOTICE

Do not push the "ReCal" Button without first ensuring the material being measured is below the sensing element.

If system is powered on the bench prior to installation, or moved from one tank to another, Re-Calibration is necessary to allow software to capture the air capacitance generated by sensing element in the tank. Merely press and hold the "ReCal" Button for 5 seconds (***Shown in Figure 2-4***). Green LED flashes for 60 seconds before reset occurs. [*Remove power from the system while the green LED is flashing and reset will occur immediately*]. If reset is unsuccessful, see section: 4 Troubleshooting.

The system is now ready for installation.

Nonvolatile Memory

The IntelliPoint has nonvolatile memory, allowing the unit to re-start after power outages without recalibrating.
When unit is powered for the first time the internal microprocessor records and stores the “Air” value. This is the uncovered value of the sensor mounted in the vessel. The unit will also store the last covered value and the last uncovered value.
Whenever The unit is powered it uses these values as a reference point to determine its current condition (normal or alarm).
The nonvolatile memory will retain the recorded values even if power is lost for months. When the unit regains power, the microprocessor compares the stored values to the current measured value. Then determines its current status.

2.6.7 Re-Calibration (Continued)

The setpoint is stored in memory to indicate the last status of the switch. So, when the unit regains power the microprocessor reads the current value of the sensor and determines the status based on the stored values. It will only re-calibrate if the re-call button is pressed.

2.7 Output & Status LEDs

There are two status LEDs located on the sensing element/ circuit board side of the housing. One is used to indicate that the unit has power. The second LED is used to indicate the status of the unit: **Normal** or **Alarm**. ***See Figure 2-5***.

NOTICE

Second Red LED is not used on the two wire transmitter.

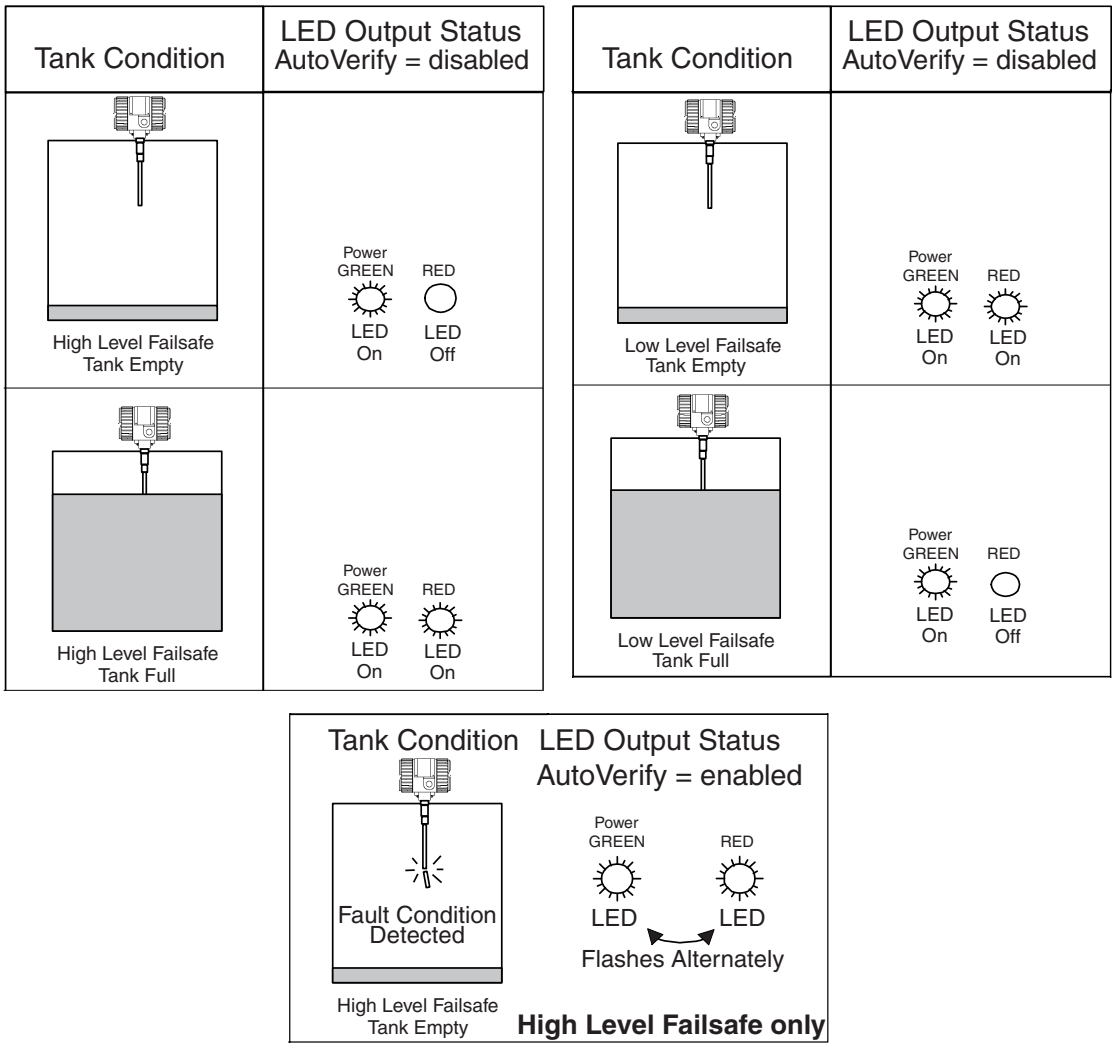


Figure 2-5
Output and LED Status

2.8 Sensing Element Connection

Sensing element connects to the rear side of the circuit board and is factory-installed.

NOTICE

The sensing element is sealed to the housing and cannot be removed without permanent damage.

For IntelliPoint RF instruments that are mounted remotely from the sensing element, the cable connections from the sensing element to the electronic unit are made to the terminals on the sensing element side of the housing. See Figure 2-7. Connect Green (Ground) wire to green screw, Red (Shield) wire to red screw, and Blue (Center) wire to blue screw.

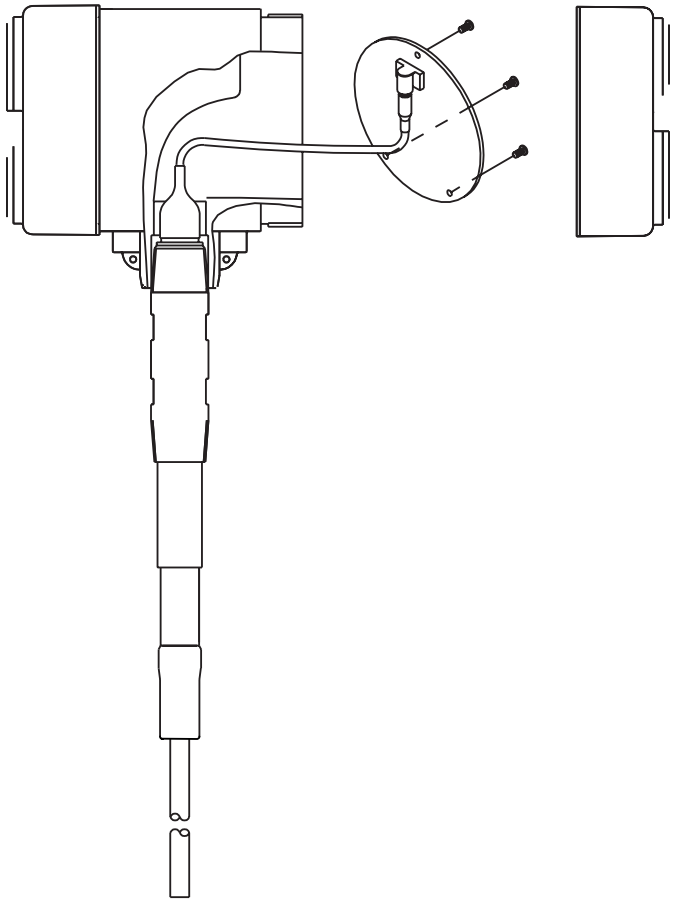


Figure 2-6
Sensing Element Connection (Integral Mounting)

2.8 Sensing Element Connection (Continued)

For IntelliPoint RF instruments that are mounted remotely from the sensing element, the cable connections from the sensing element to the electronic unit are made to the terminals on the sensing element side of the housing (marked on label). ***See Figure 2-7***. Connect Green (Ground) wire to Green screw, Red (Shield) wire to red screw, and Blue (Center) wire to blue screw.

NOTICE See Section 6.3 for Spark Protection, Mounting and Wiring

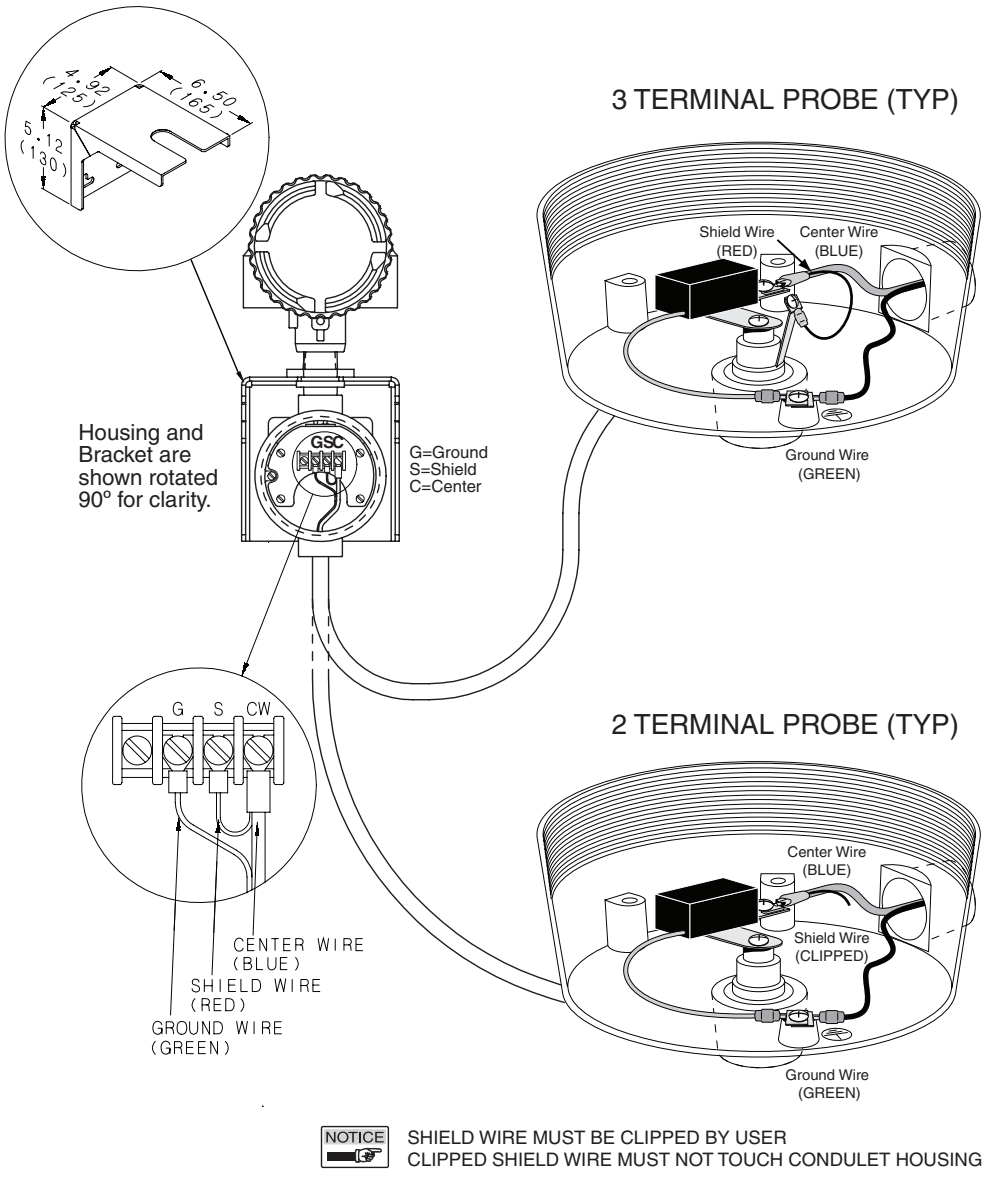


Figure 2-7
Sensing Element Connection (Remote Mounting)

2.9 Calibration

The Intellipoint™ model RLT (Standard Sensitivity) and RPT (High Sensitivity) feature Auto-Cal calibration. Auto-Calibration is suitable for liquid and slurry applications. For applications such as granular materials, interface measurement of two liquids, and plugged chute installations, a Manual Calibration IntelliPoint is recommended.

NOTICE

If you purchased an Auto-Cal Intellipoint and have determined that you require a Manual Calibration Intellipoint based on the Application Guide, please contact our field service department at 1-800-527-6297 (US and Canada) or 215-674-1234 (International Customers).

2.9.1 Using the Intellipoint with Auto-Calibration

After the Intellipoint is installed in the vessel, simply apply power. The Intellipoint electronic unit will auto calibrate.

Caution – The material being measured must be below the sensing element when power is applied (Sensing element uncovered).

Calibration is complete.

If power has been applied to the Intellipoint prior to installation (on a test bench) or, if the Intellipoint is moved from one vessel to another, RECAL is necessary for the unit to capture the new air value.

Merely press and hold the "**ReCal**" button (shown in Figure 2-4) for five (5) seconds. After five seconds, the two LED's flash for sixty seconds before reset occurs. [Remove power from the Intellipoint while the LED's are flashing and reset will occur immediately].

The Intellipoint is now ready for installation.

2.9.2 IntelliPoint Calibration Mode change

The IntelliPoint was shipped in a calibration mode that was determined to meet the needs of the application for which it was originally sold. If, for some reason, the IntelliPoint is used on a different application, or for other reasons it is determined that a different calibration mode should be used, use the following procedure to make a calibration mode change.

Each IntelliPoint has 4 different Calibration Modes that are available, dependant on the model purchased.

2.9.3 Available IntelliPoint calibration modes:

Standard Sensitivity systems (RL, RN, RT, RV model series prefix):

Mode 1: Auto-Cal 2 pF.
This mode provides a 2 pF preload; alarm setpoint varies depending on material and coating deposit changes.

Mode 2: Fixed Cal 2 pF.
This mode provides a 2 pF preload; alarm setpoint is locked to starting capacitance value recorded at system start-up.

Mode 3: Auto-Cal 10 pF.
This mode provides a 10 pF preload; alarm setpoint varies depending on material and coating deposit changes.

Mode 4: Fixed Cal 10 pF.
This mode provides a 10 pF preload; alarm setpoint is locked to starting capacitance value recorded at system start-up.

High Sensitivity systems (RH, RP model series prefix):

Mode 1: Auto-Cal 0.5 pF.
This mode provides a 0.5 pF preload; alarm setpoint varies depending on material and coating deposit changes.

Mode 2: Fixed Cal 0.5 pF.
This mode provides a 0.5 pF preload; alarm setpoint is locked to starting capacitance value recorded at system start-up.

Mode 3: Auto-Cal 2 pF.
This mode provides a 2 pF preload; alarm setpoint varies depending on material and coating deposit changes.

Mode 4: Fixed Cal 2 pF.
This mode provides a 2 pF preload; alarm setpoint is locked to starting capacitance value recorded at system start-up.

Calibration Mode changes

NOTICE

Mode Selection change must be performed with the sensing element in air (Material below sensing element).

1. On the RF circuit board (Figure 2-8), temporarily remove the shunt jumper from the "Time Delay Selection Jumper" and place it on pins 1 & 2 of JP5. The green LED will go out, and the red LED's will begin to flash. The number of flashes indicates which mode the unit is in: 1, 2, 3, or 4.

2. To change modes, press and hold the ReCal button (next to JP 5). The unit will cycle through the modes: first it will flash one time – then pause, this indicates mode #1. It will then flash twice then pause, indicating mode #2, then mode #3, etc. It will scroll through all 4 modes then start over again at mode #1. Release the button when it reaches the desired mode. The LED's will now flash the number of times indicating which mode has been selected.

3. Remove the shunt from pins 1 & 2 of JP5 and replace it on the "Time Delay Selection Jumper" pins from which it was removed. The unit will remain in the new selected calibration mode. Put the lid back on the housing securely.

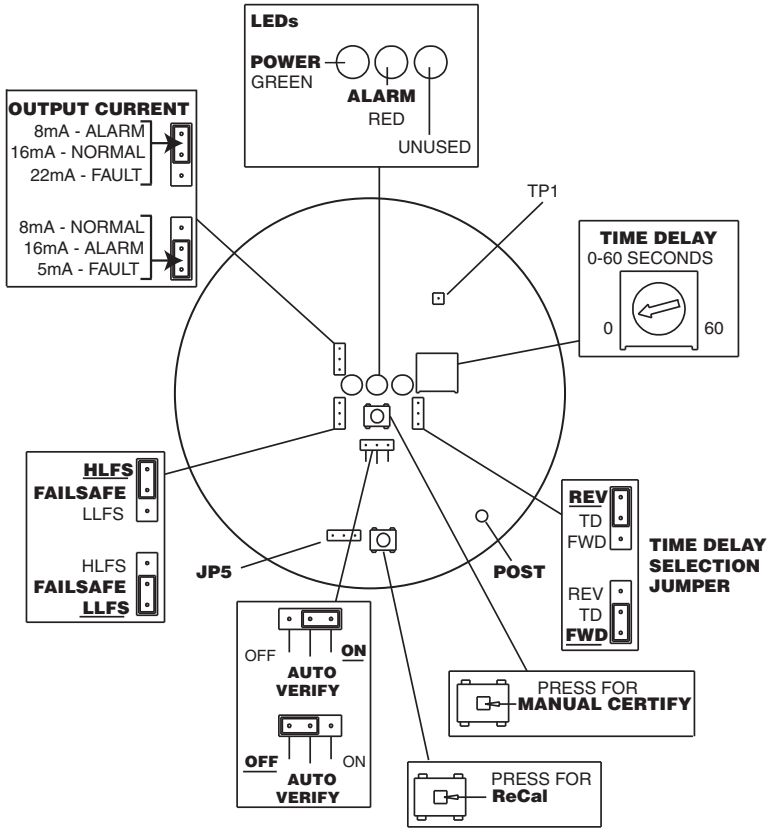


Figure 2-8
Circuit Board

Section 3: Spare Parts List

O-ring 250-1-75

Housing ¾-inch NPT Conduit Entry 260-2-540

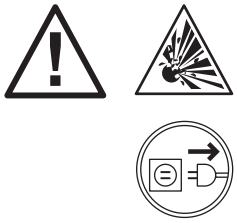
Housing M20 Conduit Entry 260-2-542

Input/Output Module..... 385-48-15

Circuit Board
- RLT - Standard Sensitivity Auto Cal... 385-48-3-2
- RPT - High Sensitivity Auto Cal 385-48-19-2
- RMT - Standard Sensitivity Manual Cal 385-48-10-2
- RGT - High Sensitivity Manual Cal..... 385-48-20-2

Integral Sensing Element Cable 380-9000-97

Section 4: Troubleshooting



WARNING:
If IntelliPoint instrument is located in a hazardous environment, do not open enclosure cover or make/break any electrical connections without first disconnecting electrical power at the source. Ensure that wiring, electrical fittings and conduit connections conform to electrical codes for the specific location and hazard level.

4.1 RF Point Level Troubleshooting Guide

Symptom	Possible Cause	Solution	See Section
Switch is in alarm and will not clear	Sensor is coated by a conductive material and the Cote-Shield™ element does not extend far enough into the vessel	Need a sensor with a longer Cote-Shield element. Rule of thumb is nozzle length + expected wall coating + 2 inches.	Section 2.2, 4.5
	Fail Safe switch is set to the wrong setting	Check to make sure the fail safe switch is in the correct position	Section 2.6.3
	Active section of sensor is touching an internal structure or material is bridging active to ground.	May be able to shorten sensor (consult factory) or relocate sensor.	Appendix A Section 2.2, 4.5
	Connection cable or harness between unit and sensor is damaged	Check connection cable for shorts, opens, or damage and proper termination	Section 4.7, 4.6
	Flexible sensor is swaying and active is touching vessel or structure	Add 1 or 2 seconds of reverse acting time delay.	Section 2.6.2
Switch stays in alarm for extended period after level falls below sensor	Material bridging from active to tank structure	May be able to shorten sensor (consult factory) or relocate sensor.	Appendix A Section 2.2, 4.5
	Time delay may be active	Make sure time delay pot is full counterclockwise.	Section 2.6.2
Switch does not respond to material	There may not be enough active to “see” an insulating material	Try changing to high sensitivity or adding active length to sensor	Consult Factory Section 4.9, App. A
	Switch was calibrated with sensor covered by material	Make sure material level is below sensor and re-calibrate	Section 2.6.7
	Granular material – Active section is not getting enough coverage due to angle of repose	Relocate sensor to get more coverage or lengthen active. Changing to high sensitivity may also help.	Appendix A
	Connection cable or harness between unit and sensor is damaged	Check connection cable for shorts, opens, or damage and proper termination	Section 4.6, 4.7
Switch delays in responding to material	Reverse acting time delay may be active	Check time delay settings to make sure they are correct	Section 2.6.2
LED’s are Flashing	Flashing LED’s indicate one of three things. Over Range / Under Range / fault	Consult instruction manual to determine which of the three symptoms are experienced.	Section 4.3, 4.4, 2.7
Over Range indicates that the standing capacitance of the sensing element in the vessel is to large to allow calibration	A long sensing element may generate too much standing capacitance to calibrate out	Padding is required – consult factory	Section 4.9
	The sensor could be touching an internal tank structure	May be able to shorten sensor (consult factory) or relocate sensor.	Appendix A
	Switch was calibrated with sensor covered by material	Make sure material level is below sensor and re-calibrate	Section 2.6.7
	Improper wiring connection (Remote Switches)	Check remote cable connections to confirm they are correct.	Section 2.8
Under Range indicates that the electronic unit is not seeing enough capacitance.	Sensing Element is Disconnected	Verify sensing element cable connections. Test cable continuity.	Section 4.6, 4.7
	Unit is damaged	Consult factory	Section 4.9
Fault Indicates the Auto-Verify feature has detected a problem.	Sensing Element is Damaged	Check Sensing Element for Damaged	Section 2.6.6
	Connecting Cable is Damaged	Check connection cable for damage, shorts, and proper termination	Section 4.6, 4.7
	Electronic Unit is damaged	Consult factory	Section 4.9
Green Power LED is out	Electronic unit is not getting power	Check power source to make sure proper power is supplied and connections are correct	Section 2.4
	Electronic Unit is damaged	Consult factory	Section 4.9

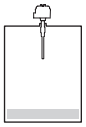
4.2 Testing Electronic Unit

NOTICE

This test is only a test of the electronic unit for troubleshooting purposes, and does not serve as a Verify or Certify test of the complete system.

Use the following steps to test the electronic unit:

1. Be sure the environment is safe before removing the lid from the housing.

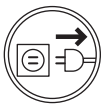


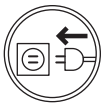
2. If possible to access the sensing element with the material below the sensor, or remove the IntelliPoint from the vessel, use your finger to touch TP1 (Shown in Figure 2-4) while holding any bare metal portion of the instrument housing with the other hand. The system should go to its alarm state.

3. Again with no material touching the sensing element, touch the tip of the sensing element with your finger, while holding any bare metal portion of the instrument housing with the other hand. The system should go to its alarm state.

4. If the IntelliPoint changes to the alarm state while touching test point TP 1, but not when touching the tip of the sensor, in most cases, the interconnecting cable is faulty. See Section 4.6: Testing Integral Cable, or Section 4.7 Testing Remote Cable.

5. If IntelliPoint is stuck in one state:
   A. Remove power.
   B. Disconnect coax cable that joins sensing element to electronic unit.
   C. Apply power.
   D. Repeat steps 3 and 4.
   E. If IntelliPoint changes state with sensing element disconnected, in most cases, sensing element is faulty. ***See Section 4.5: Testing Sensing Element.***





6. If there was no action in any of steps 2, 3, or 4 and unit appears dead:
   A. Remove and then reapply power.
   B. Press **ReCal** Button (***Shown in Figure 2-4***).
   C. Observe that green LED flashes for about 60 seconds.
   D. Green LED should be lit after 60 seconds.
   E. Touch test point (***Shown in Figure 2-4***) with your finger.
   F. Alarm & Relay should change state. If so, circuit board is working properly.
   G. Reinstall instrument and press **ReCal** Button.

7. If IntelliPoint fails all of above tests, in most cases instrument is faulty. Use a replacement Input/Output Module (**IOM**) or circuit board to determine fault. ***Consult factory***.

4.3 Over Range

If Red LED is flashing quickly (4 times/second), IntelliPoint has detected that uncovered sensing element capacitance exceeds limits of transmitter. Consult factory for pad capacitor values and instructions.

4.4 Under Range

If Red LED is flashing slowly (once per second), IntelliPoint has detected that pad capacitor value is too large. Consult factory for pad capacitor values.

4.5 Testing The Sensing Element

Integral electronics, ref figure 4-1:
Remove Sensing Element Circuit Board and disconnect cable from circuit board

Remote electronics, ref figure 4-2
Disconnect remote cable at the sensing element.

1. With the sensing element in the vessel, verify level is below the sensing element
2. Use an analog ohmmeter[1] that is set to the R x 1K ohm scale. Measure the resistances between each pair of sensing element connections. See Figure 4-1 & 4-2. Record values in Table 4.1
   a. If the process material is conductive, it is normal to measure some resistance between sensing element connections. The lowest permissible resistance values are:

Center Wire to Ground	1000 ohms.
Center Wire to Shield	600 ohms.
Cote Shield to Ground	300 ohms.

   b. If all measurements are open circuit the sensing element has passed the test. If lower resistance was measured continue with testing.
3. Clean sensing element and repeat resistance measurements with the sensing element external to the vessel.
   a. A clean sensing element should measure an open circuit on all resistance tests.
   b. If resistance values increase to an open circuit the resistance was installation or coating related. The most common causes are:
      i. Cote Shield element does not extend sufficiently into

4.5 Testing The Sensing Element (Continued)

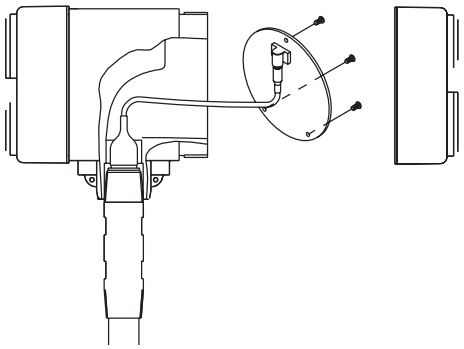
the vessel. Verify the CoteShield element extends at least 2" into the vessel and past wall build-up.

ii. Extremely conductive coating on the sensing element. This may require changing the sensing element or electronics. Contact the factory for recommendations.

iii. Sensing element is touching vessel. A resistance reading of less than 10 ohms to ground (sensing element housing or tank) is usually due to a metal-to-metal short circuit. Verify that the sensing element is not touching any vessel structure.

c. If the sensing element still shows resistance between terminals of less than 10K ohms, it is possible that moisture is present internal to the sensing element. It may be possible to dry the sensing element until the resistance increases to a value in excess of 10K ohms. However this is an indication the integrity of the sensing element has been compromised. Contact the factory for recommendations.

[1] A digital ohmmeter will often produce a resistance measurement that is higher than the actual value.



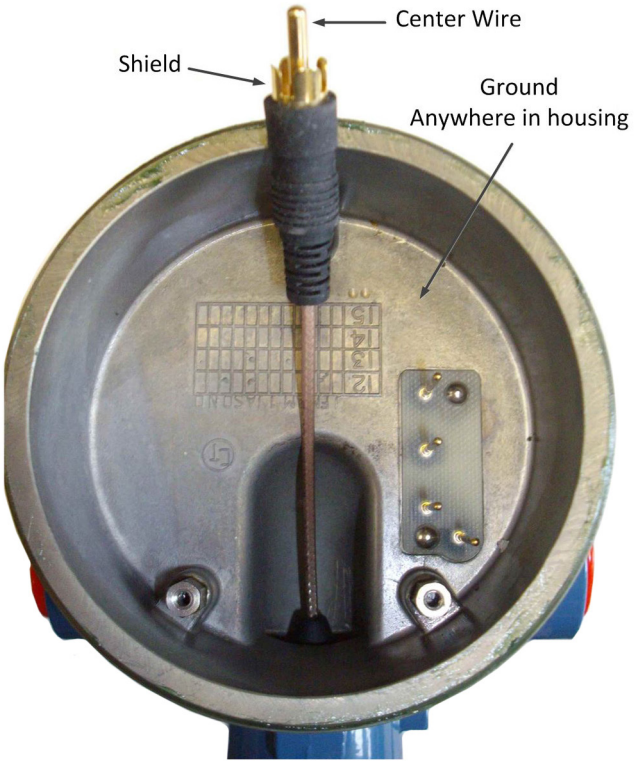


Figure 4-1
Checking the Sensing Element

4.5 Testing The Sensing Element (Continued)

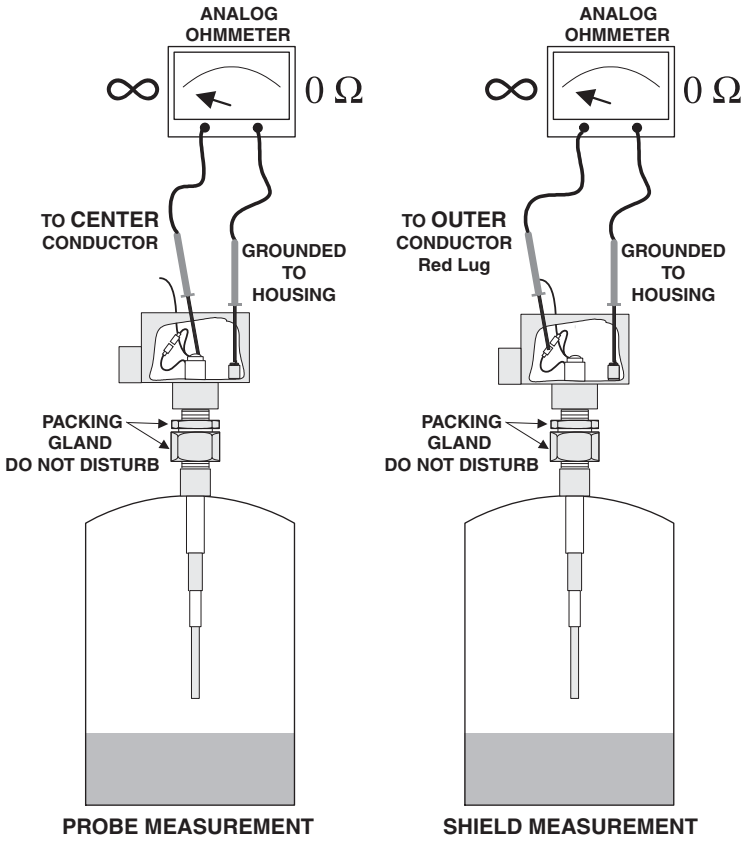


Figure 4-2
Checking the Sensing Element
Center = Probe
Outer = Shield
Housing = Ground

Sensing Element in Vessel		
Center Conductor to Housing	_____	Ohms
Center Conductor to Cote Shield	_____	Ohms
Cote Shield to Housing	_____	Ohms
Sensing Element Cleaned		
Center Conductor to Housing	_____	Ohms
Center Conductor to Cote Shield	_____	Ohms
Cote Shield to Housing	_____	Ohms

Table 4-1

4.6 Testing the Integral Cable

1. Disconnect integral cable from electronic.

2. Check for continuity.
   a. Using an ohmmeter measure the resistances.
      i. From the center wire connection on the RCA plug to the sensing element active section (center wire)
      ii. From the shield connection on the RCA plug to the sensing element shield.
      iii. If resistance is greater than 5Ω the cable has failed.

3. Check for shorts.
   a. The integral cable is tested as part of sensing element test, section 4.5.

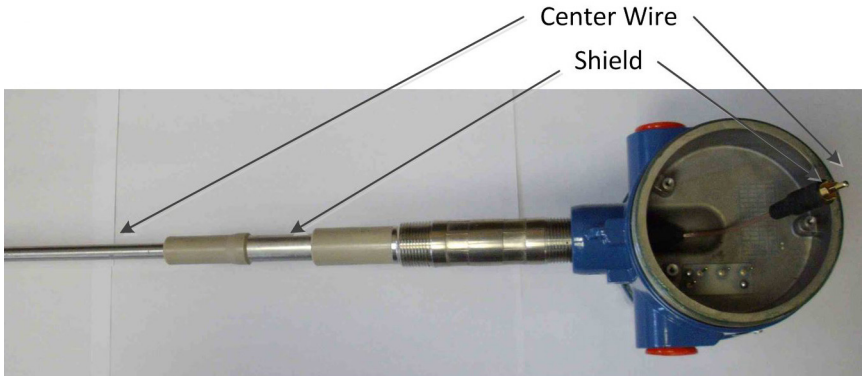


Figure 4-2
Testing Integral Cable

4.7 Testing the Remote Cable

1. Disconnect remote cable from electronic unit and sensing element.

2. Using an ohmmeter measure the resistances as shown in Figure 4-3
   a. Check for shorts.
      i. Connect ohmmeter to cable center wire and ground wire. Measure resistance as shown.
      ii. Move ohmmeter leads and repeat for all measurements shown.
      iii. If resistance is less than 100 k-ohms cable has failed
   b. Check for continuity.
      i. Short center wire to ground wire and measure resistance as shown. Should be close to 0 ohms
      ii. Short center wire to shield and repeat.
      iii. If resistance is greater than 10 ohms cable has failed

4.7 Testing the Remote Cable (Continued)

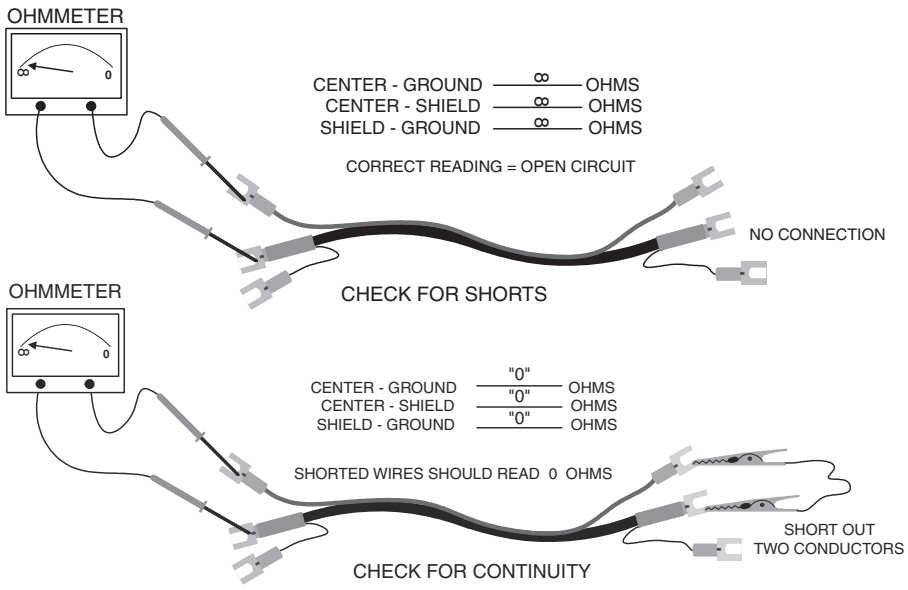
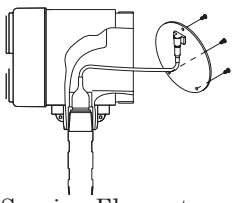


Figure 4-3
Testing Remote Cable

4.8 Testing the Power Supply

Power supply can be tested separately as follows:

1. Remove power from electronic unit.
2. Remove three screws holding circuit board into housing.
3. Disconnect sensing element connection. ***See to Section 2.8 Sensing Element Connection***.
4. Reapply power.
5. Using a DC voltmeter, measure voltage from -5 to Common and +5 to Common. Correct readings are -5 to -6 and +5 to +6 Vdc. ***See Figure 4-4***



Sensing Element
Circuits Side

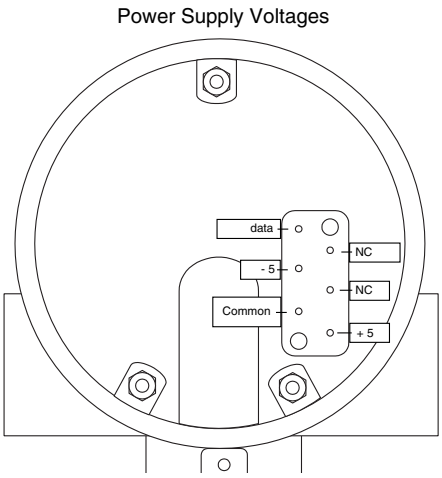


Figure 4-4
Testing Power Supply

4.9 Factory Assistance

AMETEK Drexelbrook can answer any questions about The Z-tron III series instrument. Call Customer Service at 1-800-553-9092 (US and Canada) or
+1 215 674-1234 (International).

If you require assistance and attempts to locate the problem have failed:

Contact your local Drexelbrook representative,

Telephone the Service department toll-free:
- 1-800-527-6297 (US and Canada)
- +1 215 674-1234 (International)

FAX: Service Department + 215-443-5117
E-Mail: drexelbrook.service@ametek.com

Please provide the following information:

- Instrument Model Number
- Sensing Element Model Number and Length
- Original Purchase Order Number
- Material being measured
- Temperature
- Pressure
- Agitation
- Brief description of the problem
- Checkout procedures that have failed

4.10 Field Service

Trained field servicemen are available on a time-plus-expense basis to assist in start-ups, diagnosing difficult application problems, or in-plant training of personnel. Contact the service department for further details.

4.11 Customer Training

Periodically, AMETEK Drexelbrook instrument training seminars for customers are held at the factory. These sessions are guided by Drexelbrook engineers and specialists, and provide detailed information on all aspects of level measurement, including theory and practice of instrument operation. For more information write to:
AMETEK Drexelbrook, Communications/ Training Group
or call 215-674-1234.

4.12 Equipment Return

In order to provide the best service, any equipment being returned for repair or credit must be pre-approved by the factory.

In many applications, sensing elements are exposed to hazardous materials.

- **OSHA mandates** that our employees be informed and protected from hazardous chemicals.
- **Material Safety Data Sheets (MSDS)** listing the hazardous materials to which the sensing element has been exposed MUST accompany any repair.
- It is your responsibility to fully disclose all chemicals and **decontaminate** the sensing element.

To obtain a return authorization (RA#), contact the Service department at 1-800-527-6297 (US and Canada) or + 215-674-1234 (International).

- Please provide the following information:
- Model Number of Return Equipment
- Serial Number
- Original Purchase Order Number
- Process Materials to which the equipment has been exposed.
- MSDS sheets for any hazardous materials
- Billing Address
- Shipping Address
- Purchase Order Number for Repairs
- Please include a purchase order even if the repair is under warranty. If repair is covered under warranty, you will not be charged.

Ship equipment freight prepaid to:

AMETEK-DREXELBROOK.
205 KEITH VALLEY ROAD
HORSHAM, PA 19044-1499
COD shipments will not be accepted

Section 5

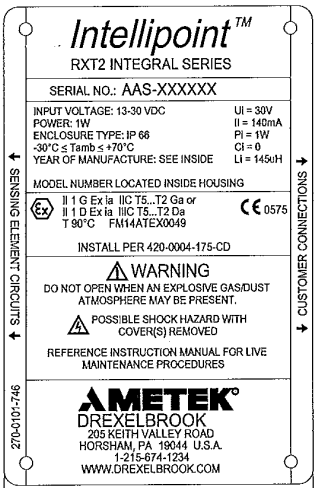
Section 5: Specifications

Technology:	RF/Capacitance
Calibration:	None
Modes of Operation:	High and Low level
Repeatability:	2mm (0.08 inch) conductive liquids
Response Time:	Less than 1 second
Time Delay:	0 to 60 seconds forward and reverse acting
Ambient Electronics:	-30 to 70°C (-22 to 158°F) ATEX -40 to 70°C (-40 to 158°F) FM
Storage Temperature:	-40 to 85°C (-40 to 185°F)
Indicators:	LEDs: Green Power, Red Alarm Status
Self-Check:	Continuous AutoVerify and Manual Certify
Power Supply:	13 to 30 VDC *Note: The minimum supply voltage at the transmitter terminal is:* 13 VDC at 22mA (Fault) 19 VDC at 5mA (Fault)
Power Consumption:	1 watt maximum
Output:	8 mA - Alarm 16 mA - Normal 22 mA - Fault (or field-selectable) 8 mA - Normal 16 mA - Alarm 5 mA - Fault
Housing (Electronics):	Dual Compartment, powder-coated aluminum with two cable entries
Cable Entry:	M20 x 1.5 ATEX ¾-inch NPT FM/FMc
Ingress Protection:	IP66 NEMA 4X

5.1 Approvals

Explosion-proof for use in Class I, Division 1, Groups A, B, C, and D, Dust-Ignition proof for use in Class II and III, Division 1, Groups E, F, and G; Non-incendiary for use in Class I, Division 2, Groups A, B, C, and D; Suitable for use in Class II and III, Division 2, Groups F and G Hazardous (Classified) Indoor and Outdoor (Type 4, 4X, IP66) Locations with Intrinsically Safe connections to Class I, II, and III, Division 1, Groups A, B, C, D, E, F, and G Hazardous (Classified) locations in accordance with control drawing 420-0004-173-CD; Intrinsically Safe for use in Class I, II, and III, Division 1, Groups A, B, C, D, E, F, and G hazardous (Classified) locations in accordance with entity requirements and control drawing 420-0004-173-CD.

ATEX

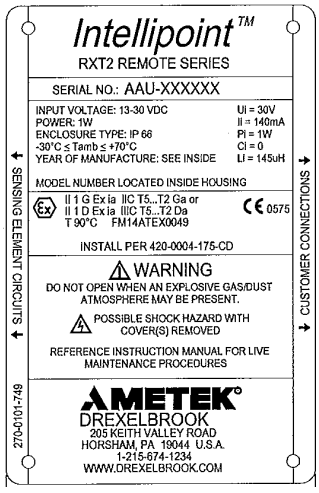


Integral

II 1 G Ex ia IIC T5... T2 -30°C ≤ TAMB ≤ +70°C; IP66
II 1 D Ex ia IIIC T90°C -30°C ≤ TAMB ≤ +70°C; IP66
FM14ATEX0049

CE 0575

Temperature Class	Process Temperature
T5	100°C
T4	135°C
T3	200°C
T2	230°C



Remote

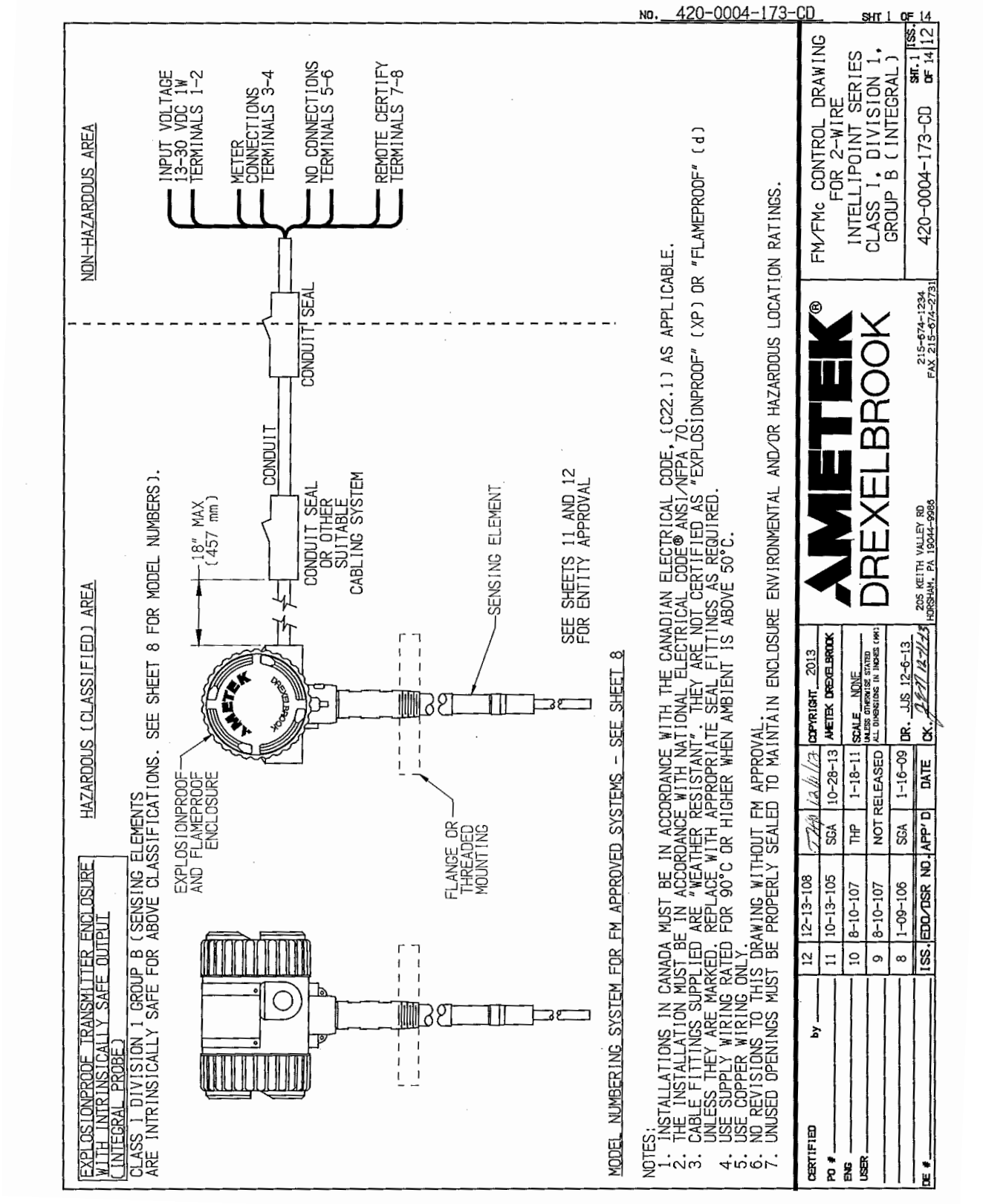
II 1 G Ex ia IIC T5... T2 -30°C ≤ TAMB ≤ +70°C; IP66
II 1 D Ex ia IIIC T90°C -30°C ≤ TAMB ≤ +70°C; IP66
FM14ATEX0049

CE 0575

<u>Special Condition for Safe Use</u>
Impact and friction hazards shall be considered when the transmitter is used in category II 1 G according to EN50284 clause 4.3.1

Section 6: Control Drawings

6.1 FM / FMc Control Drawings


NO. 420-0004-173-CD
SHT 1 OF 14
EXPLOSIONPROOF TRANSMITTER ENCLOSURE WITH INTRINSICALLY SAFE OUTPUT (INTEGRAL PROBE)
CLASS I DIVISION 1 GROUP B (SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEET 8 FOR MODEL NUMBERS).
HAZARDOUS (CLASSIFIED) AREA
NON-HAZARDOUS AREA
EXPLOSIONPROOF AND FLAMEPROOF ENCLOSURE
18" MAX (457 mm)
CONDUIT
CONDUIT SEAL
CONDUIT SEAL OR OTHER SUITABLE CABLING SYSTEM
INPUT VOLTAGE 13-30 VDC 1W TERMINALS 1-2
METER CONNECTIONS TERMINALS 3-4
NO CONNECTIONS TERMINALS 5-6
REMOTE CERTIFY TERMINALS 7-8
SENSING ELEMENT
FLANGE OR THREADED MOUNTING
SEE SHEETS 11 AND 12 FOR ENTITY APPROVAL
MODEL NUMBERING SYSTEM FOR FM APPROVED SYSTEMS - SEE SHEET 8
NOTES:
1. INSTALLATIONS IN CANADA MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, (C22.1) AS APPLICABLE.
2. THE INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE® ANSI/NFPA 70.
3. CABLE FITTINGS SUPPLIED ARE "WEATHER RESISTANT". THEY ARE NOT CERTIFIED AS "EXPLOSIONPROOF" (XP) OR "FLAMEPROOF" (d) UNLESS THEY ARE MARKED. REPLACE WITH APPROPRIATE SEAL FITTINGS AS REQUIRED.
4. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
5. USE COPPER WIRING ONLY.
6. NO REVISIONS TO THIS DRAWING WITHOUT FM APPROVAL.
7. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
PO #
ENG
USER
DE #
ISS. 12 12-13-108
11 10-13-105 SGA 10-28-13
10 8-10-107 THP 1-18-11
9 8-10-107 NOT RELEASED
8 1-09-106 SGA 1-16-09
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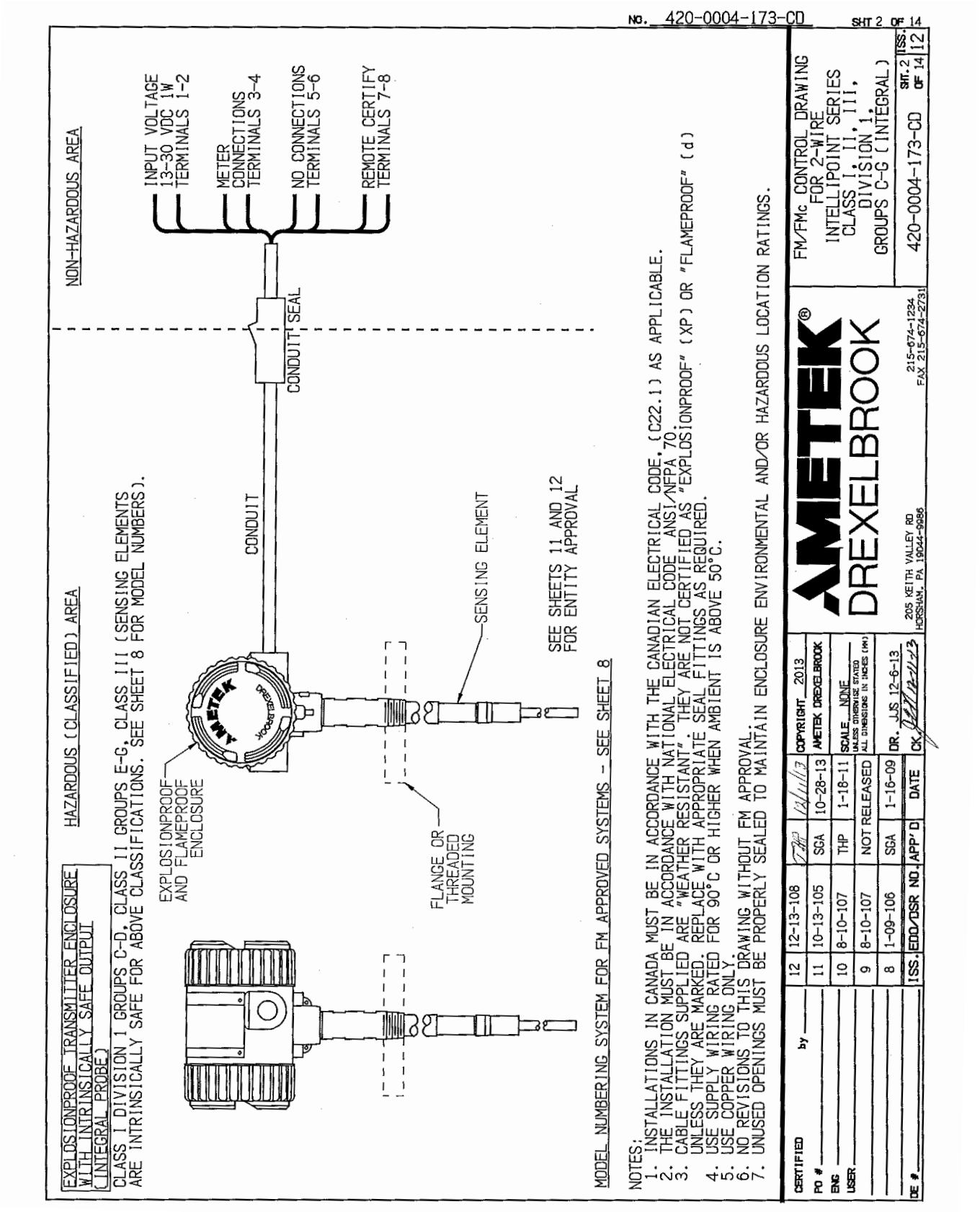
DREXELBROOK
205 KEITH VALLEY RD
HORSHAM, PA 19044-9986
215-674-1234
FAX 215-674-2731
FM/FMc CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES CLASS I, DIVISION 1, GROUP B (INTEGRAL)
420-0004-173-CD
SHT. 1 OF 14
ISS. 12

6.1 FM / FMc Control Drawings (Continued)


NO. 420-0004-173-CD
SHT 2 OF 14
EXPLOSIONPROOF TRANSMITTER ENCLOSURE WITH INTRINSICALLY SAFE OUTPUT (INTEGRAL PROBE)
CLASS I DIVISION 1 GROUPS C-D, CLASS II GROUPS E-G, CLASS III (SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEET 8 FOR MODEL NUMBERS).
HAZARDOUS (CLASSIFIED) AREA
NON-HAZARDOUS AREA
EXPLOSIONPROOF AND FLAMEPROOF ENCLOSURE
CONDUIT
CONDUIT SEAL
SENSING ELEMENT
FLANGE OR THREADED MOUNTING
SEE SHEETS 11 AND 12 FOR ENTITY APPROVAL
INPUT VOLTAGE 13-30 VDC 1W TERMINALS 1-2
METER CONNECTIONS TERMINALS 3-4
NO CONNECTIONS TERMINALS 5-6
REMOTE CERTIFY TERMINALS 7-8
MODEL NUMBERING SYSTEM FOR FM APPROVED SYSTEMS - SEE SHEET 8
NOTES:
1. INSTALLATIONS IN CANADA MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, (C22.1) AS APPLICABLE.
2. THE INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE ANSI/NFPA 70.
3. CABLE FITTINGS SUPPLIED ARE "WEATHER RESISTANT". THEY ARE NOT CERTIFIED AS "EXPLOSIONPROOF" (XP) OR "FLAMEPROOF" (d) UNLESS THEY ARE MARKED. REPLACE WITH APPROPRIATE SEAL FITTINGS AS REQUIRED.
4. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
5. USE COPPER WIRING ONLY.
6. NO REVISIONS TO THIS DRAWING WITHOUT FM APPROVAL.
7. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
PO #
ENG
USER
DE #
12 12-13-108
11 10-13-105 SGA 10-28-13
10 8-10-107 THP 1-18-11
9 8-10-107 NOT RELEASED
8 1-09-106 SGA 1-16-09
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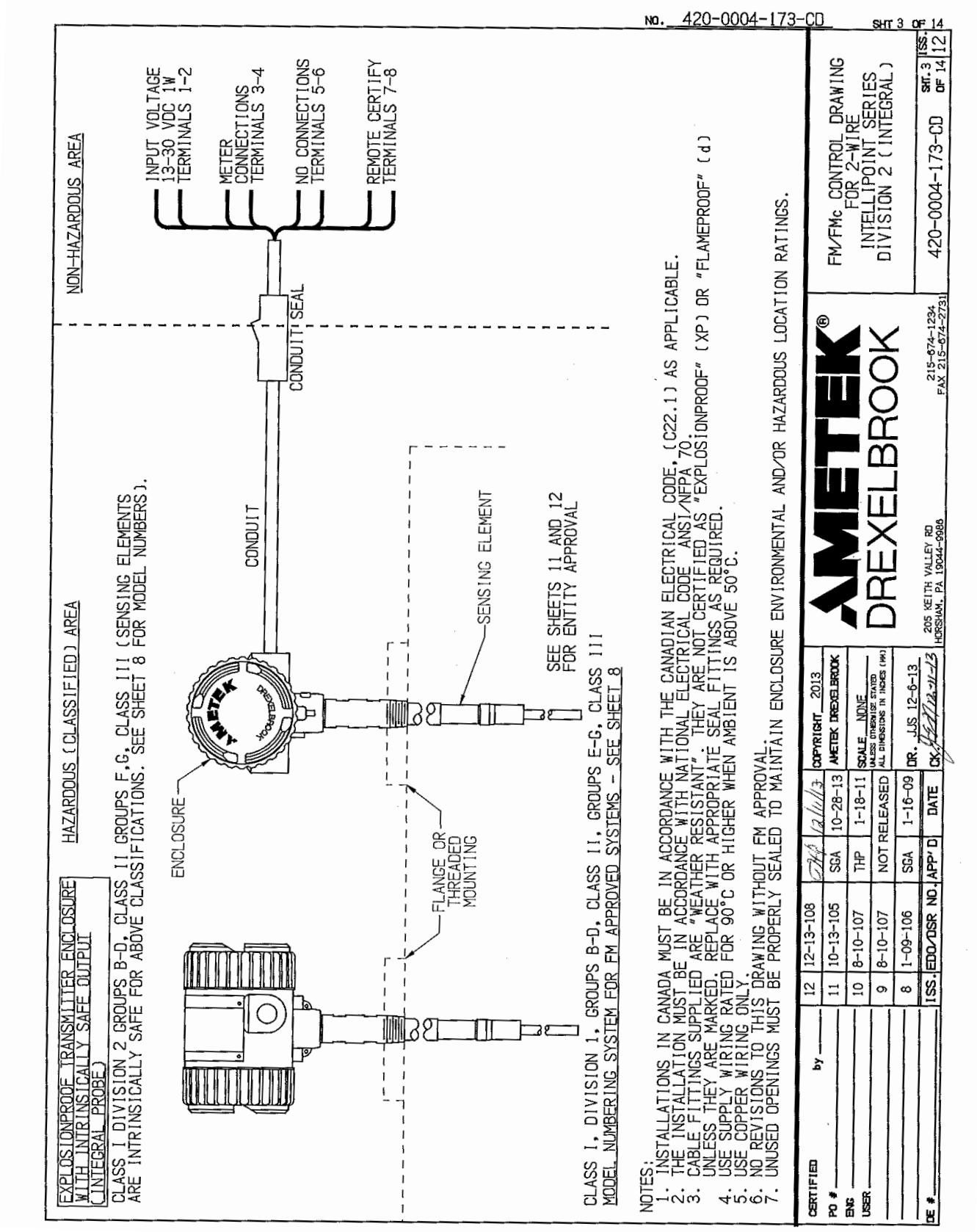
HORSHAM, PA 19044-9986
215-674-1234
FAX 215-674-2731
FM/FMc CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES CLASS I, II, III, DIVISION 1, GROUPS C-G (INTEGRAL)
420-0004-173-CD
SHT. 2 OF 14
ISS. 12

6.1 FM / FMc Control Drawings (Continued)


No. 420-0004-173-CD
SHT 3 OF 14
EXPLOSIONPROOF TRANSMITTER ENCLOSURE WITH INTRINSICALLY SAFE OUTPUT (INTEGRAL PROBE)
HAZARDOUS (CLASSIFIED) AREA
NON-HAZARDOUS AREA
CLASS I DIVISION 2 GROUPS B-D, CLASS II GROUPS F,G, CLASS III (SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEET 8 FOR MODEL NUMBERS).
INPUT VOLTAGE 13-30 VDC 1W TERMINALS 1-2
METER CONNECTIONS TERMINALS 3-4
NO CONNECTIONS TERMINALS 5-6
REMOTE CERTIFY TERMINALS 7-8
CONDUIT SEAL
CONDUIT
ENCLOSURE
SENSING ELEMENT
FLANGE OR THREADED MOUNTING
SEE SHEETS 11 AND 12 FOR ENTITY APPROVAL
CLASS I, DIVISION 1, GROUPS B-D, CLASS II, GROUPS E-G, CLASS III
MODEL NUMBERING SYSTEM FOR FM APPROVED SYSTEMS - SEE SHEET 8
NOTES:
1. INSTALLATIONS IN CANADA MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, (C22.1) AS APPLICABLE.
2. THE INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE ANSI/NFPA 70.
3. CABLE FITTINGS SUPPLIED ARE "WEATHER RESISTANT". THEY ARE NOT CERTIFIED AS "EXPLOSIONPROOF" (XP) OR "FLAMEPROOF" (d) UNLESS THEY ARE MARKED. REPLACE WITH APPROPRIATE SEAL FITTINGS AS REQUIRED.
4. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
5. USE COPPER WIRING ONLY.
6. NO REVISIONS TO THIS DRAWING WITHOUT FM APPROVAL.
7. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
PO #
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DE #
ISS. 12 12-13-108 THP 12/16/13
11 10-13-105 SGA 10-28-13
10 8-10-107 THP 1-18-11
9 8-10-107 NOT RELEASED
8 1-09-106 SGA 1-16-09
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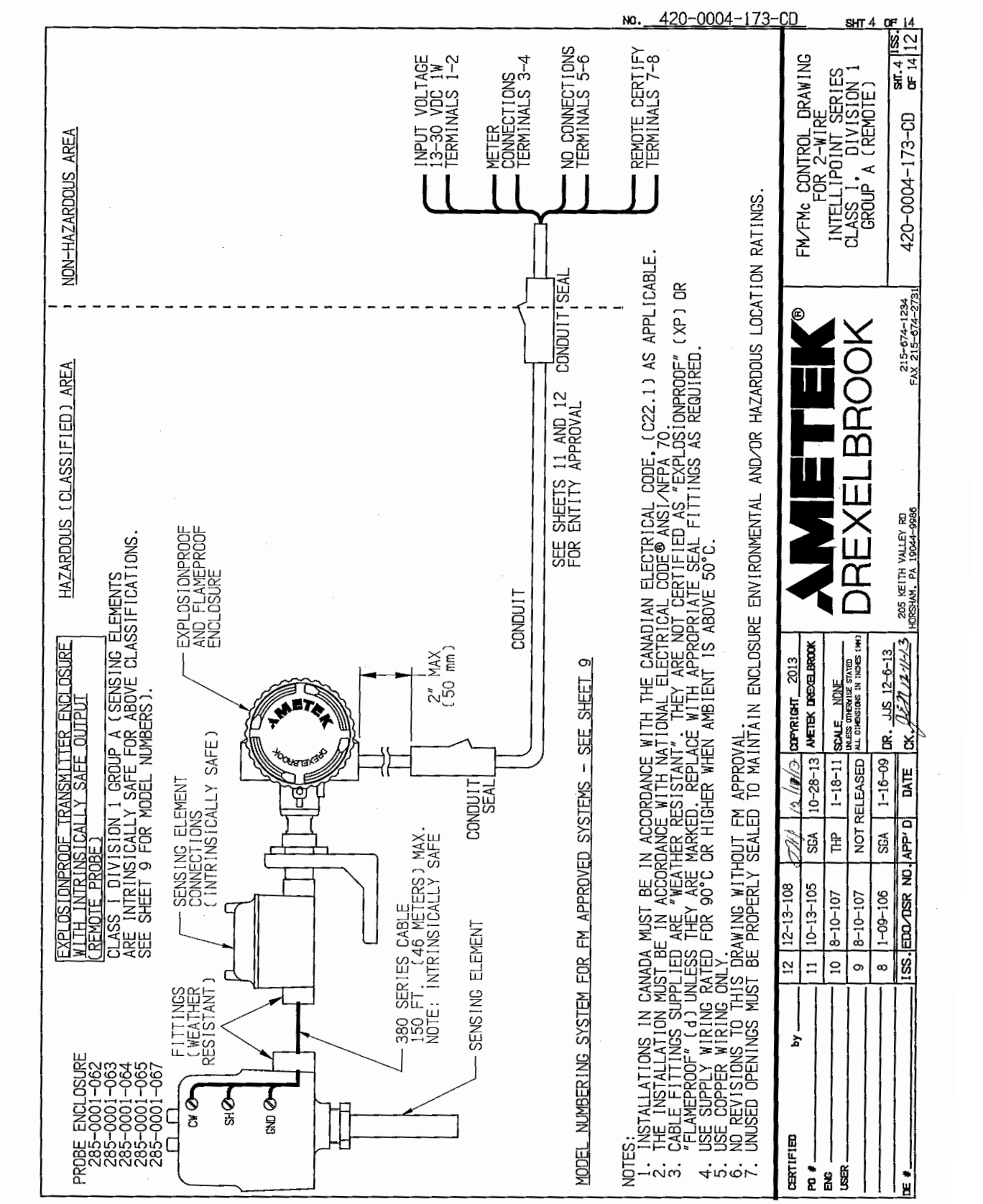
215-674-1234
FAX 215-674-2731
FM/FMc CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES DIVISION 2 (INTEGRAL)
420-0004-173-CD
SHT. 3 OF 14
ISS. 12

6.1 FM / FMc Control Drawings (Continued)


No. 420-0004-173-CD
SHT 4 OF 14
NON-HAZARDOUS AREA
HAZARDOUS (CLASSIFIED) AREA
EXPLOSIONPROOF TRANSMITTER ENCLOSURE WITH INTRINSICALLY SAFE OUTPUT (REMOTE PROBE)
CLASS I DIVISION 1 GROUP A (SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEET 9 FOR MODEL NUMBERS).
PROBE ENCLOSURE
285-0001-062
285-0001-063
285-0001-064
285-0001-065
285-0001-067
FITTINGS (WEATHER RESISTANT)
SENSING ELEMENT CONNECTIONS (INTRINSICALLY SAFE)
EXPLOSIONPROOF AND FLAMEPROOF ENCLOSURE
380 SERIES CABLE 150 FT. (46 METERS) MAX. NOTE: INTRINSICALLY SAFE
SENSING ELEMENT
CONDUIT SEAL
2" MAX (50 mm)
CONDUIT
SEE SHEETS 11 AND 12 FOR ENTITY APPROVAL
CONDUIT SEAL
INPUT VOLTAGE 13-30 VDC 1W TERMINALS 1-2
METER CONNECTIONS TERMINALS 3-4
NO CONNECTIONS TERMINALS 5-6
REMOTE CERTIFY TERMINALS 7-8
CW
SH
GND
MODEL NUMBERING SYSTEM FOR FM APPROVED SYSTEMS - SEE SHEET 9
NOTES:
1. INSTALLATIONS IN CANADA MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, (C22.1) AS APPLICABLE.
2. THE INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE® ANSI/NFPA 70.
3. CABLE FITTINGS SUPPLIED ARE "WEATHER RESISTANT"; THEY ARE NOT CERTIFIED AS "EXPLOSIONPROOF" (XP) OR "FLAMEPROOF" (d) UNLESS THEY ARE MARKED. REPLACE WITH APPROPRIATE SEAL FITTINGS AS REQUIRED.
4. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
5. USE COPPER WIRING ONLY.
6. NO REVISIONS TO THIS DRAWING WITHOUT FM APPROVAL.
7. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
PO #
ENG
USER
DE #
ISS. | EDO/DSR NO. | APP'D | DATE
12 | 12-13-108
11 | 10-13-105 | SGA | 10-28-13
10 | 8-10-107 | THP | 1-18-11
9 | 8-10-107 | NOT RELEASED
8 | 1-09-106 | SGA | 1-16-09
DR. JJS 12-6-13
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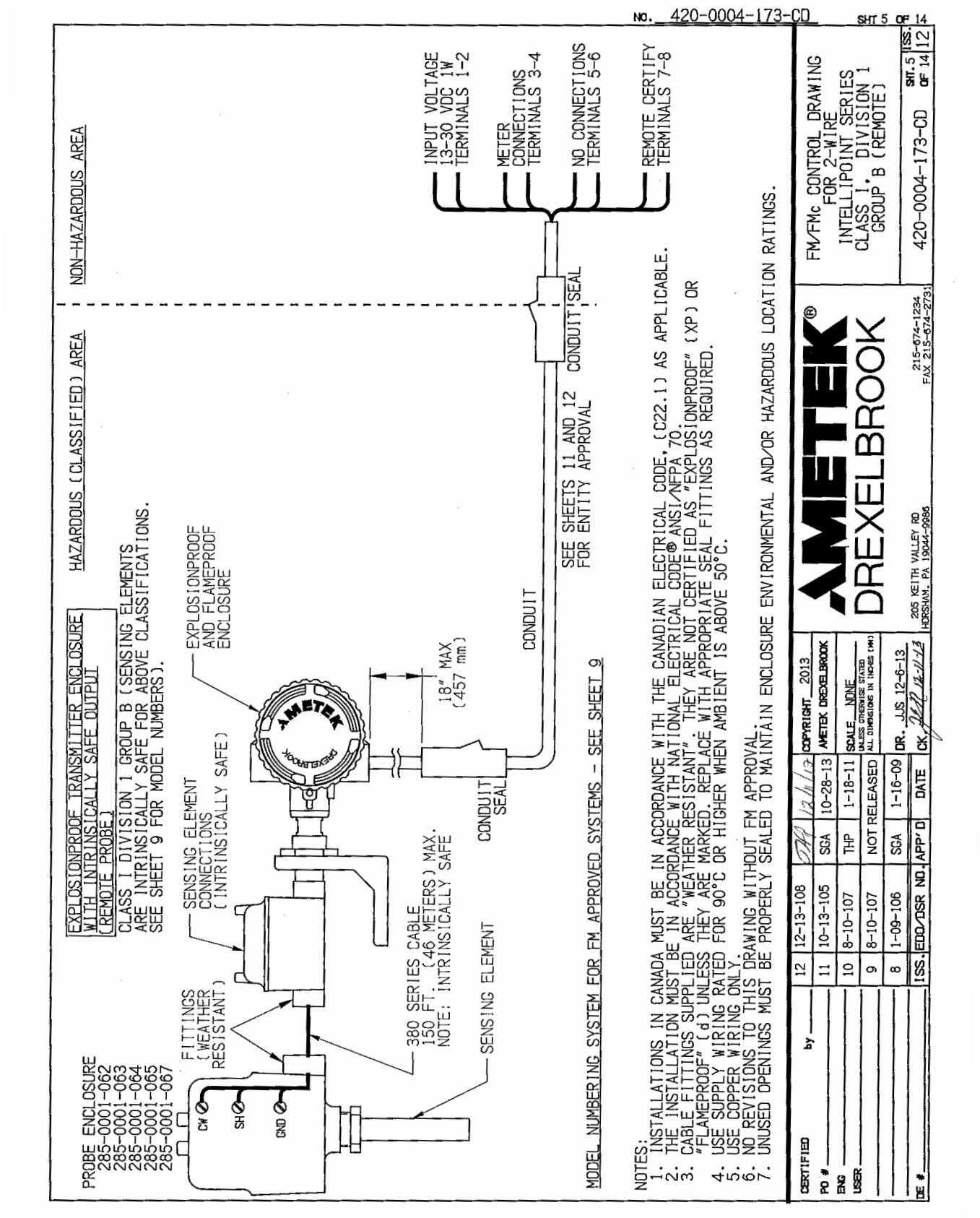
FAX 215-674-2731
FM/FMc CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES CLASS I, DIVISION 1 GROUP A (REMOTE)
420-0004-173-CD
SHT. 4 OF 14
ISS. 12

6.1 FM / FMc Control Drawings (Continued)


NO. 420-0004-173-CD
SHT 5 OF 14
EXPLOSIONPROOF TRANSMITTER ENCLOSURE WITH INTRINSICALLY SAFE OUTPUT (REMOTE PROBE)
CLASS I DIVISION 1 GROUP B (SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEET 9 FOR MODEL NUMBERS).
HAZARDOUS (CLASSIFIED) AREA
NON-HAZARDOUS AREA
PROBE ENCLOSURE
285-0001-062
285-0001-063
285-0001-064
285-0001-065
285-0001-067
FITTINGS (WEATHER RESISTANT)
SENSING ELEMENT CONNECTIONS (INTRINSICALLY SAFE)
EXPLOSIONPROOF AND FLAMEPROOF ENCLOSURE
CW
SH
GND
380 SERIES CABLE 150 FT. (46 METERS) MAX. NOTE: INTRINSICALLY SAFE
SENSING ELEMENT
CONDUIT SEAL
18" MAX (457 mm)
CONDUIT
SEE SHEETS 11 AND 12 FOR ENTITY APPROVAL
CONDUIT SEAL
INPUT VOLTAGE 13-30 VDC 1W TERMINALS 1-2
METER CONNECTIONS TERMINALS 3-4
NO CONNECTIONS TERMINALS 5-6
REMOTE CERTIFY TERMINALS 7-8
MODEL NUMBERING SYSTEM FOR FM APPROVED SYSTEMS - SEE SHEET 9
NOTES:
1. INSTALLATIONS IN CANADA MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, (C22.1) AS APPLICABLE.
2. THE INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE® ANSI/NFPA 70.
3. CABLE FITTINGS SUPPLIED ARE "WEATHER RESISTANT". THEY ARE NOT CERTIFIED AS "EXPLOSIONPROOF" (XP) OR "FLAMEPROOF" (d) UNLESS THEY ARE MARKED. REPLACE WITH APPROPRIATE SEAL FITTINGS AS REQUIRED.
4. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
5. USE COPPER WIRING ONLY.
6. NO REVISIONS TO THIS DRAWING WITHOUT FM APPROVAL.
7. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
PO #
ENG
USER
DE #
12 12-13-108
11 10-13-105 SGA 10-28-13
10 8-10-107 THP 1-18-11
9 8-10-107 NOT RELEASED
8 1-09-106 SGA 1-16-09
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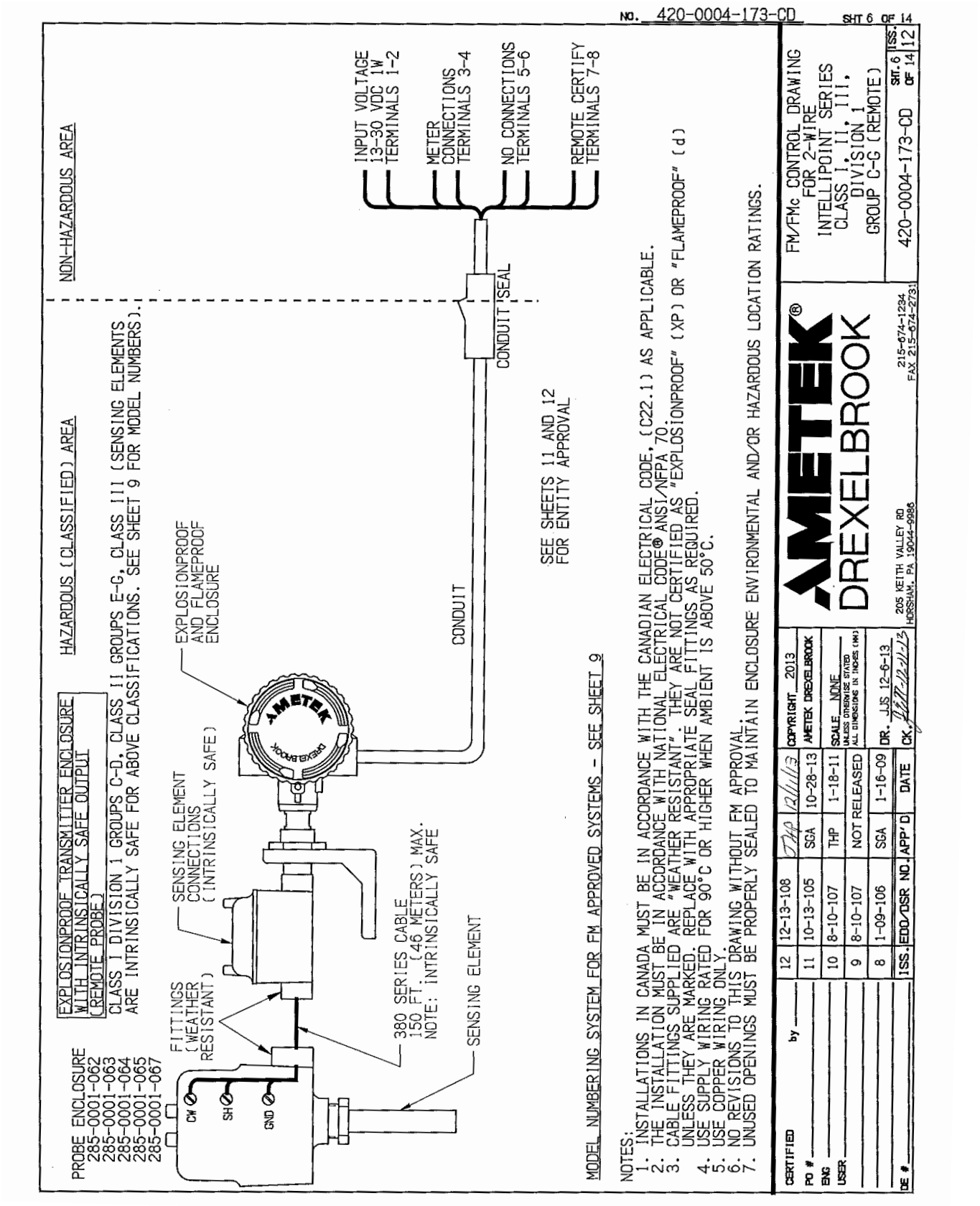
205 KEITH VALLEY RD
HORSHAM, PA 19044-0986
215-674-1234
FAX 215-674-2731
FM/FMc CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES CLASS I, DIVISION 1 GROUP B (REMOTE)
420-0004-173-CD
SHT. 5 OF 14
ISS. 12

6.1 FM / FMc Control Drawings (Continued)


NO. 420-0004-173-CD
SHT 6 OF 14
NON-HAZARDOUS AREA
HAZARDOUS (CLASSIFIED) AREA
EXPLOSIONPROOF TRANSMITTER ENCLOSURE WITH INTRINSICALLY SAFE OUTPUT (REMOTE PROBE)
CLASS I DIVISION 1 GROUPS C-D, CLASS II GROUPS E-G, CLASS III (SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEET 9 FOR MODEL NUMBERS).
PROBE ENCLOSURE
285-0001-062
285-0001-063
285-0001-064
285-0001-065
285-0001-067
FITTINGS (WEATHER RESISTANT)
SENSING ELEMENT CONNECTIONS (INTRINSICALLY SAFE)
EXPLOSIONPROOF AND FLAMEPROOF ENCLOSURE
380 SERIES CABLE 150 FT. (46 METERS) MAX. NOTE: INTRINSICALLY SAFE
SENSING ELEMENT
CW
SH
GND
CONDUIT
CONDUIT SEAL
SEE SHEETS 11 AND 12 FOR ENTITY APPROVAL
INPUT VOLTAGE 13-30 VDC 1W TERMINALS 1-2
METER CONNECTIONS TERMINALS 3-4
NO CONNECTIONS TERMINALS 5-6
REMOTE CERTIFY TERMINALS 7-8
MODEL NUMBERING SYSTEM FOR FM APPROVED SYSTEMS - SEE SHEET 9
NOTES:
1. INSTALLATIONS IN CANADA MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, (C22.1) AS APPLICABLE.
2. THE INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE® ANSI/NFPA 70.
3. CABLE FITTINGS SUPPLIED ARE "WEATHER RESISTANT". THEY ARE NOT CERTIFIED AS "EXPLOSIONPROOF" (XP) OR "FLAMEPROOF" (d) UNLESS THEY ARE MARKED. REPLACE WITH APPROPRIATE SEAL FITTINGS AS REQUIRED.
4. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
5. USE COPPER WIRING ONLY.
6. NO REVISIONS TO THIS DRAWING WITHOUT FM APPROVAL.
7. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
PO #
ENG
USER
DE #
12 12-13-108 THP 12/11/13
11 10-13-105 SGA 10-28-13
10 8-10-107 THP 1-18-11
9 8-10-107 NOT RELEASED
8 1-09-106 SGA 1-16-09
ISS. EDD/DSR NO. APP'D DATE
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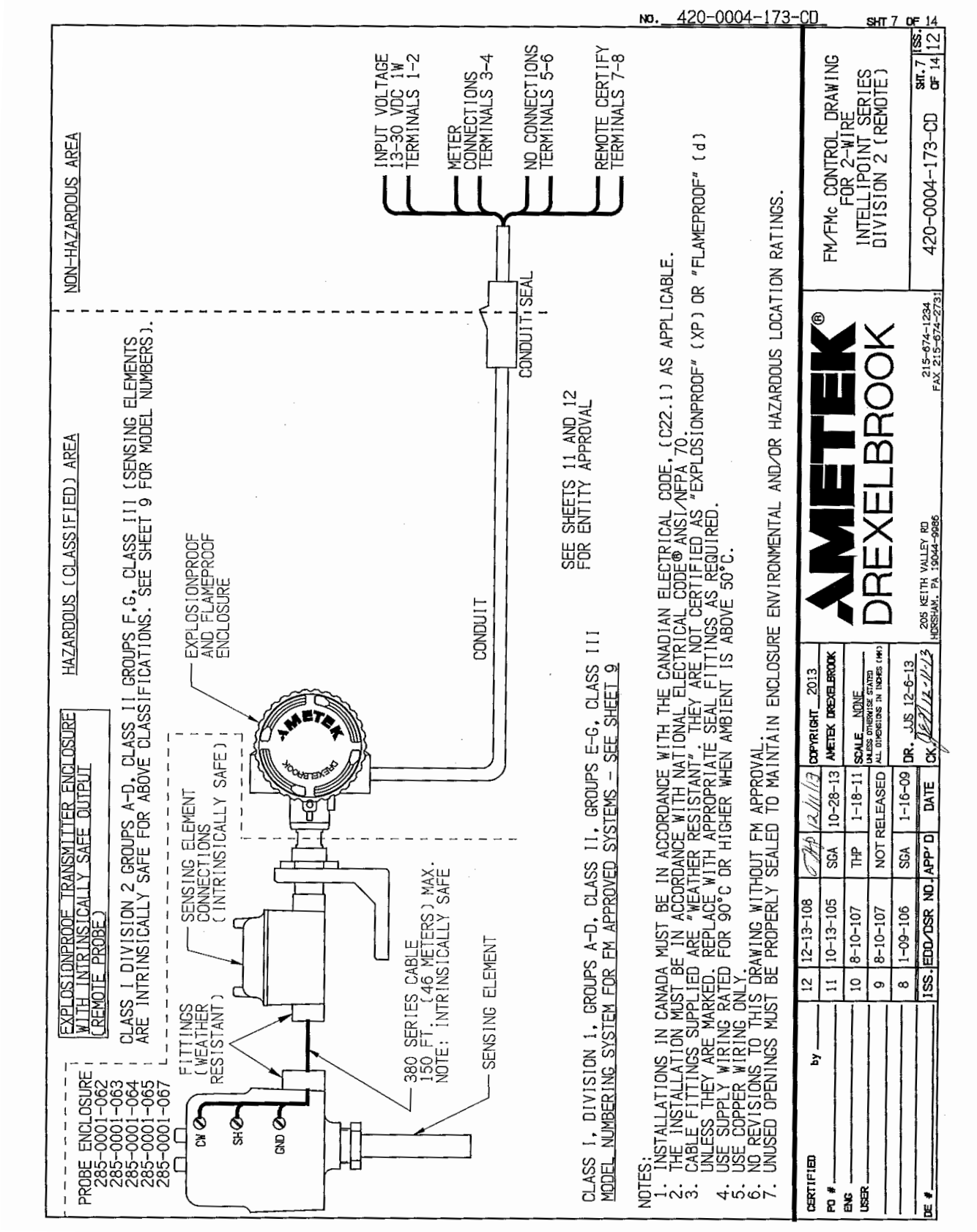
SCALE NONE UNLESS OTHERWISE STATED ALL DIMENSIONS IN INCHES (MM)
DR. JJS 12-6-13
CK. THP 12/11/13
AMETEK®
DREXELBROOK
205 KEITH VALLEY RD
HORSHAM, PA 19044-0986
215-674-1234
FAX 215-674-2731
FM/FMc CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES CLASS I, II, III, DIVISION 1 GROUP C-G (REMOTE)
420-0004-173-CD
SHT. 6 OF 14
ISS. 12

6.1 FM / FMc Control Drawings (Continued)


NO. 420-0004-173-CD
SHT 7 OF 14
NON-HAZARDOUS AREA
HAZARDOUS (CLASSIFIED) AREA
EXPLOSIONPROOF TRANSMITTER ENCLOSURE WITH INTRINSICALLY SAFE OUTPUT (REMOTE PROBE)
PROBE ENCLOSURE
285-0001-062
285-0001-063
285-0001-064
285-0001-065
285-0001-067
CLASS I DIVISION 2 GROUPS A-D, CLASS II GROUPS F,G, CLASS III (SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEET 9 FOR MODEL NUMBERS).
FITTINGS (WEATHER RESISTANT)
SENSING ELEMENT CONNECTIONS (INTRINSICALLY SAFE)
EXPLOSIONPROOF AND FLAMEPROOF ENCLOSURE
CONDUIT SEAL
CONDUIT
380 SERIES CABLE 150 FT. (46 METERS) MAX. NOTE: INTRINSICALLY SAFE
SENSING ELEMENT
CW
SH
GND
INPUT VOLTAGE 13-30 VDC 1W TERMINALS 1-2
METER CONNECTIONS TERMINALS 3-4
NO CONNECTIONS TERMINALS 5-6
REMOTE CERTIFY TERMINALS 7-8
SEE SHEETS 11 AND 12 FOR ENTITY APPROVAL
CLASS I, DIVISION 1, GROUPS A-D, CLASS II, GROUPS E-G, CLASS III
MODEL NUMBERING SYSTEM FOR FM APPROVED SYSTEMS - SEE SHEET 9
NOTES:
1. INSTALLATIONS IN CANADA MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, (C22.1) AS APPLICABLE.
2. THE INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE® ANSI/NFPA 70.
3. CABLE FITTINGS SUPPLIED ARE "WEATHER RESISTANT". THEY ARE NOT CERTIFIED AS "EXPLOSIONPROOF" (XP) OR "FLAMEPROOF" (d) UNLESS THEY ARE MARKED. REPLACE WITH APPROPRIATE SEAL FITTINGS AS REQUIRED.
4. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
5. USE COPPER WIRING ONLY.
6. NO REVISIONS TO THIS DRAWING WITHOUT FM APPROVAL.
7. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
PO #
ENG
USER
ISS. EDD/DSR NO. APP'D DATE
12 12-13-108
11 10-13-105 SGA 10-28-13
10 8-10-107 THP 1-18-11
9 8-10-107 NOT RELEASED
8 1-09-106 SGA 1-16-09
DE #
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CK.
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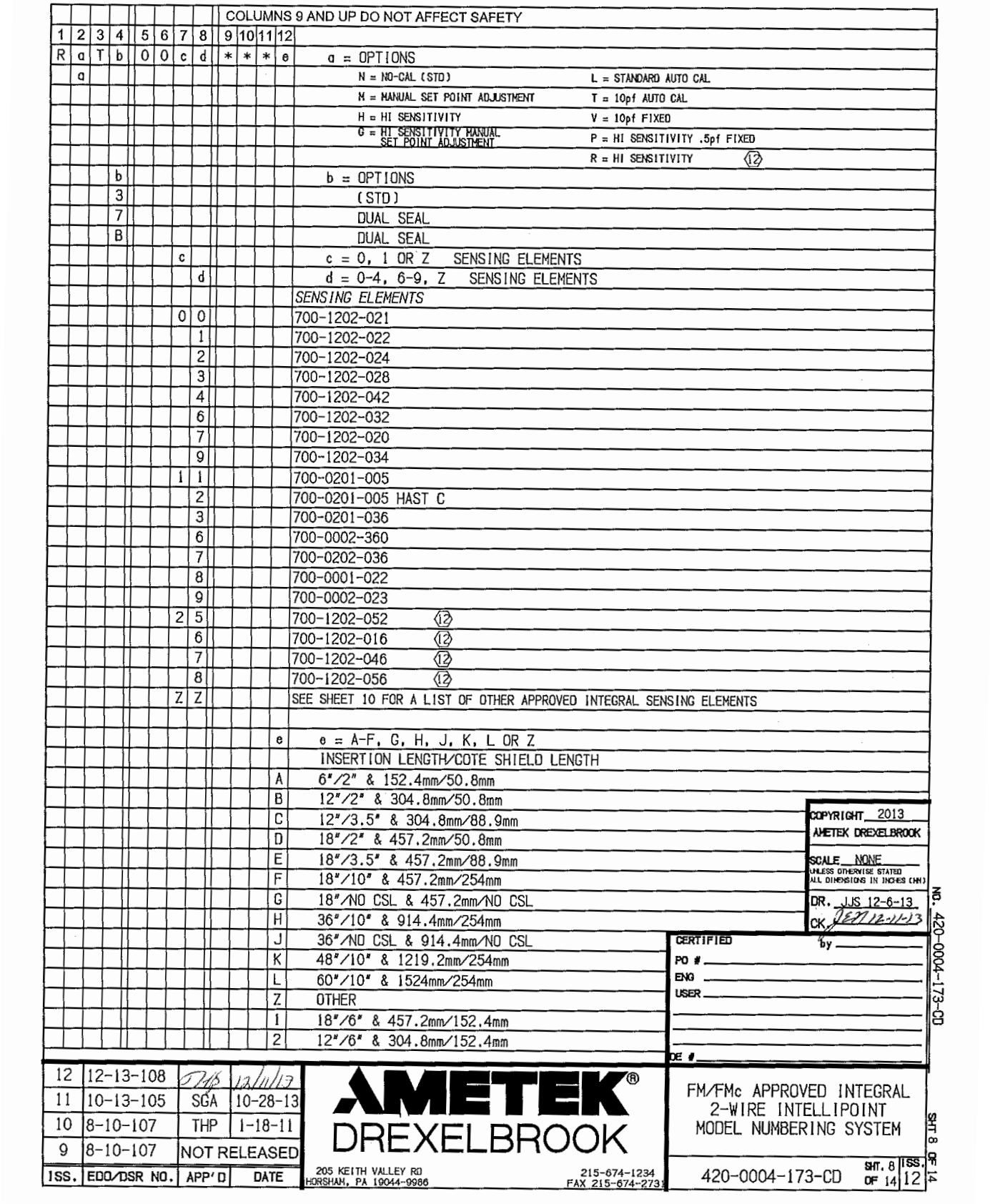
205 KEITH VALLEY RD
HORSHAM, PA 19044-9986
215-674-1234
FAX 215-674-2731
FM/FMc CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES DIVISION 2 (REMOTE)
420-0004-173-CD
SHT. 7 OF 14
ISS. 12

6.1 FM / FMc Control Drawings (Continued)



COLUMNS 9 AND UP DO NOT AFFECT SAFETY

1	2	3	4	5	6	7	8	9	10	11	12	
R	a	T	b	0	0	c	d	*	*	*	e	a = OPTIONS
	a											N = NO-CAL (STD) — L = STANDARD AUTO CAL
												M = MANUAL SET POINT ADJUSTMENT — T = 10pf AUTO CAL
												H = HI SENSITIVITY — V = 10pf FIXED
												G = HI SENSITIVITY MANUAL SET POINT ADJUSTMENT — P = HI SENSITIVITY .5pf FIXED
												R = HI SENSITIVITY (12)
			b									b = OPTIONS
			3									(STD)
			7									DUAL SEAL
			B									DUAL SEAL
						c						c = 0, 1 OR Z SENSING ELEMENTS
							d					d = 0-4, 6-9, Z SENSING ELEMENTS
												SENSING ELEMENTS
						0	0					700-1202-021
							1					700-1202-022
							2					700-1202-024
							3					700-1202-028
							4					700-1202-042
							6					700-1202-032
							7					700-1202-020
							9					700-1202-034
						1	1					700-0201-005
							2					700-0201-005 HAST C
							3					700-0201-036
							6					700-0002-360
							7					700-0202-036
							8					700-0001-022
							9					700-0002-023
						2	5					700-1202-052 (12)
							6					700-1202-016 (12)
							7					700-1202-046 (12)
							8					700-1202-056 (12)
						Z	Z					SEE SHEET 10 FOR A LIST OF OTHER APPROVED INTEGRAL SENSING ELEMENTS
											e	e = A-F, G, H, J, K, L OR Z
												INSERTION LENGTH/COTE SHIELD LENGTH
											A	6"/2" & 152.4mm/50.8mm
											B	12"/2" & 304.8mm/50.8mm
											C	12"/3.5" & 304.8mm/88.9mm
											D	18"/2" & 457.2mm/50.8mm
											E	18"/3.5" & 457.2mm/88.9mm
											F	18"/10" & 457.2mm/254mm
											G	18"/NO CSL & 457.2mm/NO CSL
											H	36"/10" & 914.4mm/254mm
											J	36"/NO CSL & 914.4mm/NO CSL
											K	48"/10" & 1219.2mm/254mm
											L	60"/10" & 1524mm/254mm
											Z	OTHER
											1	18"/6" & 457.2mm/152.4mm
											2	12"/6" & 304.8mm/152.4mm

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SCALE NONE (UNLESS OTHERWISE STATED ALL DIMENSIONS IN INCHES (MM))

DR. JJS 12-6-13

CK JEDT 12-11-13

CERTIFIED by

PO #

ENG

USER

DE #

NO. 420-0004-173-CD

ISS.	EDO/DSR NO.	APP'D	DATE
12	12-13-108	THP	12/11/13
11	10-13-105	SGA	10-28-13
10	8-10-107	THP	1-18-11
9	8-10-107	NOT RELEASED	

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FM/FMc APPROVED INTEGRAL
2-WIRE INTELLIPOINT
MODEL NUMBERING SYSTEM

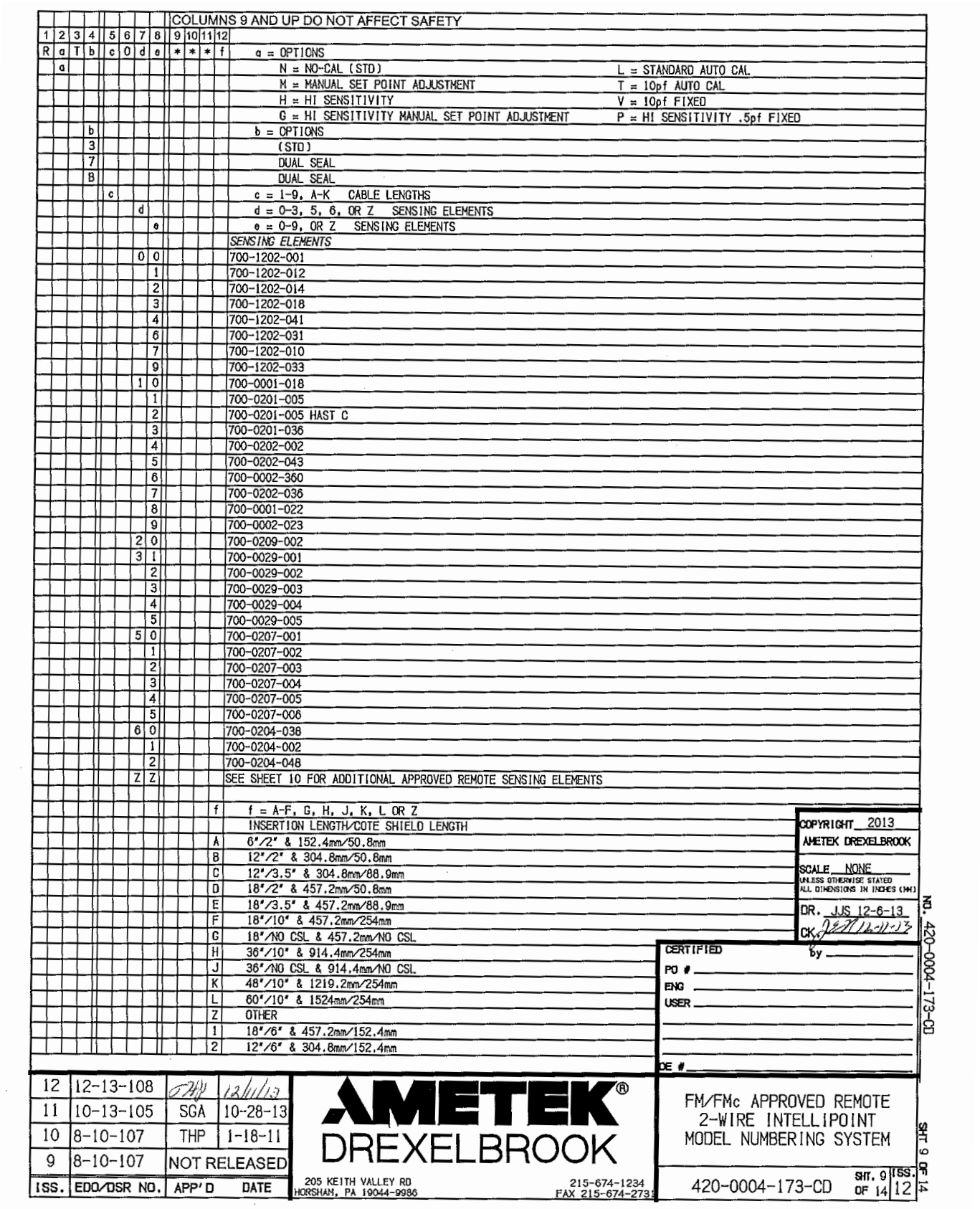
420-0004-173-CD

SHT. 8 OF 14

ISS. 12

SHT 8 OF 14

6.1 FM / FMc Control Drawings (Continued)



COLUMNS 9 AND UP DO NOT AFFECT SAFETY

1	2	3	4	5	6	7	8	9	10	11	12	
R	a	T	b	c	0	d	e	*	*	*	f	a = OPTIONS
	a											N = NO-CAL (STD) — L = STANDARD AUTO CAL
												M = MANUAL SET POINT ADJUSTMENT — T = 10pf AUTO CAL
												H = HI SENSITIVITY — V = 10pf FIXED
												G = HI SENSITIVITY MANUAL SET POINT ADJUSTMENT — P = HI SENSITIVITY .5pf FIXED
		b										b = OPTIONS
		3										(STD)
		7										DUAL SEAL
		B										DUAL SEAL
			c									c = 1-9, A-K CABLE LENGTHS
					d							d = 0-3, 5, 6, OR Z SENSING ELEMENTS
						e						e = 0-9, OR Z SENSING ELEMENTS
												SENSING ELEMENTS
					0	0						700-1202-001
						1						700-1202-012
						2						700-1202-014
						3						700-1202-018
						4						700-1202-041
						6						700-1202-031
						7						700-1202-010
						9						700-1202-033
					1	0						700-0001-018
						1						700-0201-005
						2						700-0201-005 HAST C
						3						700-0201-036
						4						700-0202-002
						5						700-0202-043
						6						700-0002-360
						7						700-0202-036
						8						700-0001-022
						9						700-0002-023
					2	0						700-0209-002
					3	1						700-0029-001
						2						700-0029-002
						3						700-0029-003
						4						700-0029-004
						5						700-0029-005
					5	0						700-0207-001
						1						700-0207-002
						2						700-0207-003
						3						700-0207-004
						4						700-0207-005
						5						700-0207-006
					6	0						700-0204-038
						1						700-0204-002
						2						700-0204-048
					Z	Z						SEE SHEET 10 FOR ADDITIONAL APPROVED REMOTE SENSING ELEMENTS

	f = A-F, G, H, J, K, L OR Z INSERTION LENGTH/COTE SHIELD LENGTH
A	6"/2" & 152.4mm/50.8mm
B	12"/2" & 304.8mm/50.8mm
C	12"/3.5" & 304.8mm/88.9mm
D	18"/2" & 457.2mm/50.8mm
E	18"/3.5" & 457.2mm/88.9mm
F	18"/10" & 457.2mm/254mm
G	18"/NO CSL & 457.2mm/NO CSL
H	36"/10" & 914.4mm/254mm
J	36"/NO CSL & 914.4mm/NO CSL
K	48"/10" & 1219.2mm/254mm
L	60"/10" & 1524mm/254mm
Z	OTHER
1	18"/6" & 457.2mm/152.4mm
2	12"/6" & 304.8mm/152.4mm

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SCALE NONE
UNLESS OTHERWISE STATED
ALL DIMENSIONS IN INCHES (MM)

DR. JJS 12-6-13
CK. JJS 12-11-13

CERTIFIED by
PO #
ENG
USER
DE #

NO. 420-0004-173-CD

ISS.	EDO/DSR NO.	APP'D	DATE
12	12-13-108	THP	12/11/13
11	10-13-105	SGA	10-28-13
10	8-10-107	THP	1-18-11
9	8-10-107	NOT RELEASED	

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FM/FMc APPROVED REMOTE
2-WIRE INTELLIPOINT
MODEL NUMBERING SYSTEM

420-0004-173-CD SHT. 9 OF 14 ISS. 12

SHT. 9 OF 14

6.1 FM / FMc Control Drawings (Continued)

MODEL NUMBERS OF APPROVED REMOTE SENSING ELEMENTS

701-mnop-qrs-t LEVEL PROBE

l = FAMILY NO. 0, 4
m = FAMILY NO. 0 THROUGH 9, BLANK
n = FAMILY NO. 0 THROUGH 9, BLANK
o = 0 THROUGH 9, BLANK
p = 0 THROUGH 9
q = FAMILY NO. 0 THROUGH 9, BLANK
r = FAMILY NO. 0 THROUGH 9, BLANK
s = FAMILY NO. 0 THROUGH 9
t = 24 CHARACTER EXPANDED NUMBERING SYSTEM, DOES NOT AFFECT SAFETY

NOTES:
1. MAXIMUM PROCESS TEMPERATURE 290°C.
2. MAXIMUM SENSOR CAPACITANCE < 1uF.
3. MAXIMUM INSERTION LENGTH *RIGID SENSOR* 30 FEET (9.144 METERS).
4. MAXIMUM INSERTION LENGTH *FLEXIBLE SENSOR* 2000 FEET (609.6 METERS).
5. SENSING ELEMENT ENCLOSURE IP66 (IP RATING DOES NOT APPLY TO SPECIAL SENSORS SUPPLIED WITHOUT A 285- SERIES SENSING ELEMENT ENCLOSURE).

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SCALE NONE
UNLESS OTHERWISE STATED
ALL DIMENSIONS IN INCHES (MM)
DR. JJS 12-6-13
CK. 12-11-13

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PO #
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DE #

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12	12-13-108		12/11/13
11	10-13-105	SGA	10-28-13
10	8-10-107	THP	1-18-11
9	8-10-107	NOT RELEASED	

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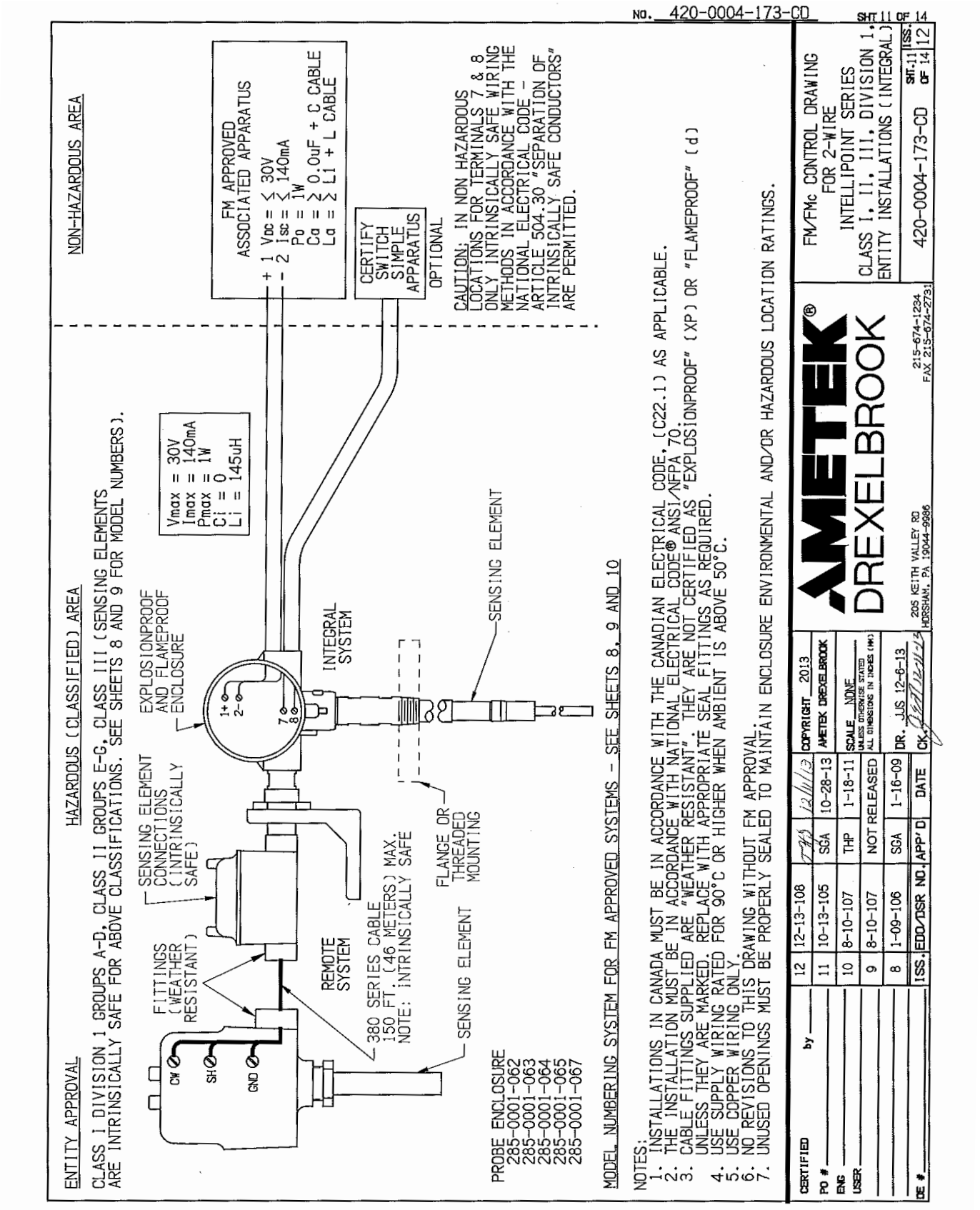
FM/FMc APPROVED
ADDITIONAL
SENSING ELEMENTS

420-0004-173-CD SHT. 10 OF 14 ISS. 12

SHT 10 OF 14

6.1 FM / FMc Control Drawings (Continued)


NO. 420-0004-173-CD
SHT 11 OF 14
ENTITY APPROVAL
HAZARDOUS (CLASSIFIED) AREA
NON-HAZARDOUS AREA
CLASS I DIVISION 1 GROUPS A-D, CLASS II GROUPS E-G, CLASS III (SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEETS 8 AND 9 FOR MODEL NUMBERS).
FM APPROVED ASSOCIATED APPARATUS
+ 1 Voc = ≤ 30V
- 2 Isc = ≤ 140mA
Po = 1W
Ca = ≥ 0.0uF + C CABLE
La = ≥ Li + L CABLE
CERTIFY SWITCH SIMPLE APPARATUS OPTIONAL
CAUTION: IN NON HAZARDOUS LOCATIONS FOR TERMINALS 7 & 8 ONLY INTRINSICALLY SAFE WIRING METHODS IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE - ARTICLE 504.30 "SEPARATION OF INTRINSICALLY SAFE CONDUCTORS" ARE PERMITTED.
Vmax = 30V
Imax = 140mA
Pmax = 1W
Ci = 0
Li = 145uH
EXPLOSIONPROOF AND FLAMEPROOF ENCLOSURE
SENSING ELEMENT CONNECTIONS (INTRINSICALLY SAFE)
FITTINGS (WEATHER RESISTANT)
INTEGRAL SYSTEM
REMOTE SYSTEM
380 SERIES CABLE 150 FT. (46 METERS) MAX. NOTE: INTRINSICALLY SAFE
FLANGE OR THREADED MOUNTING
SENSING ELEMENT
SENSING ELEMENT
CW
SH
GND
1+
2-
7
8
PROBE ENCLOSURE
285-0001-062
285-0001-063
285-0001-064
285-0001-065
285-0001-067
MODEL NUMBERING SYSTEM FOR FM APPROVED SYSTEMS - SEE SHEETS 8, 9 AND 10
NOTES:
1. INSTALLATIONS IN CANADA MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, (C22.1) AS APPLICABLE.
2. THE INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE® ANSI/NFPA 70.
3. CABLE FITTINGS SUPPLIED ARE "WEATHER RESISTANT". THEY ARE NOT CERTIFIED AS "EXPLOSIONPROOF" (XP) OR "FLAMEPROOF" (d) UNLESS THEY ARE MARKED. REPLACE WITH APPROPRIATE SEAL FITTINGS AS REQUIRED.
4. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
5. USE COPPER WIRING ONLY.
6. NO REVISIONS TO THIS DRAWING WITHOUT FM APPROVAL.
7. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
PO #
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USER
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ISS. 12 12-13-108
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CK.
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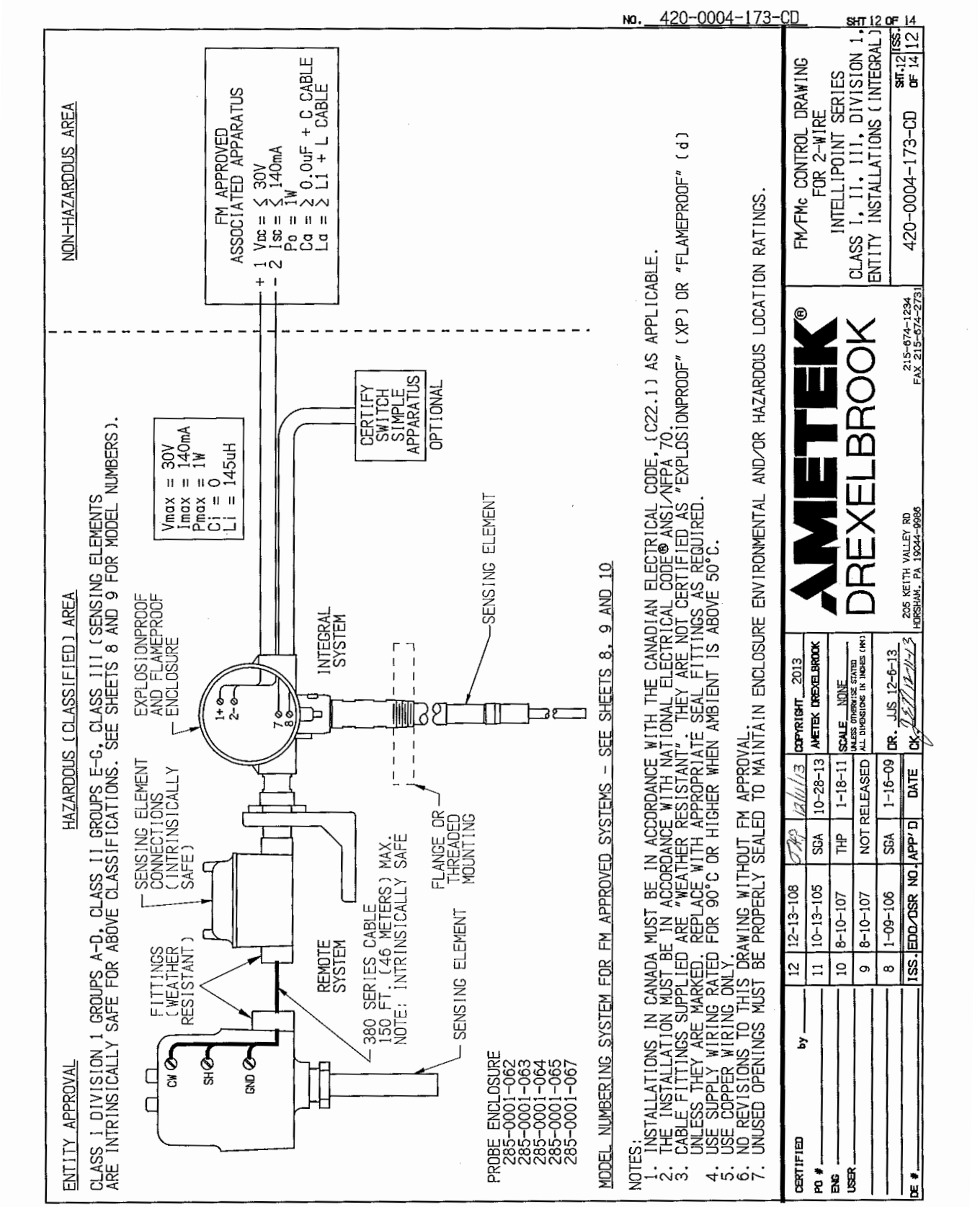
HORSHAM, PA 19044-9986
215-674-1234
FAX 215-674-2731
FM/FMc CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES CLASS I, II, III, DIVISION 1, ENTITY INSTALLATIONS (INTEGRAL)
420-0004-173-CD
SHT. 11 OF 14
ISS. 12

6.1 FM / FMc Control Drawings (Continued)


NO. 420-0004-173-CD
SHT 12 OF 14
NON-HAZARDOUS AREA
HAZARDOUS (CLASSIFIED) AREA
ENTITY APPROVAL
CLASS I DIVISION 1 GROUPS A-D, CLASS II GROUPS E-G, CLASS III (SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEETS 8 AND 9 FOR MODEL NUMBERS).
FM APPROVED ASSOCIATED APPARATUS
+ 1 Voc = ≤ 30V
- 2 Isc = ≤ 140mA
Po = 1W
Ca = ≥ 0.0uF + C CABLE
La = ≥ Li + L CABLE
Vmax = 30V
Imax = 140mA
Pmax = 1W
Ci = 0
Li = 145uH
EXPLOSIONPROOF AND FLAMEPROOF ENCLOSURE
SENSING ELEMENT CONNECTIONS (INTRINSICALLY SAFE)
FITTINGS (WEATHER RESISTANT)
CW
SH
GND
REMOTE SYSTEM
380 SERIES CABLE 150 FT. (46 METERS) MAX. NOTE: INTRINSICALLY SAFE
SENSING ELEMENT
FLANGE OR THREADED MOUNTING
INTEGRAL SYSTEM
CERTIFY SWITCH SIMPLE APPARATUS
OPTIONAL
SENSING ELEMENT
PROBE ENCLOSURE
285-0001-062
285-0001-063
285-0001-064
285-0001-065
285-0001-067
MODEL NUMBERING SYSTEM FOR FM APPROVED SYSTEMS - SEE SHEETS 8, 9 AND 10
NOTES:
1. INSTALLATIONS IN CANADA MUST BE IN ACCORDANCE WITH THE CANADIAN ELECTRICAL CODE, (C22.1) AS APPLICABLE.
2. THE INSTALLATION MUST BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE® ANSI/NFPA 70.
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6. NO REVISIONS TO THIS DRAWING WITHOUT FM APPROVAL.
7. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
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FM/FMc CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES CLASS I, II, III, DIVISION 1, ENTITY INSTALLATIONS (INTEGRAL)
420-0004-173-CD
SHT. 12 OF 14
ISS. 12

6.1 FM / FMc Control Drawings (Continued)

										COLUMNS 11 AND UP DO NOT AFFECT SAFETY				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
S	a	R	b	T	c	0	0	d	e	*	*	*	f	
	a													a = SIL LEVEL 1 OR 2
			b											b = OPTIONS
														N = NO-CAL (STD) 2pF FIXED L = STANDARD AUTO CAL 2pF AUTO
					c									c = OPTIONS
														3 = (STD)
														7 = DUAL SEAL
														B = DUAL SEAL
								d						d = 0, 1 OR Z SENSING ELEMENTS
									e					e = 0-4, 6-9, Z SENSING ELEMENTS
														SENSING ELEMENTS
								0	0					700-1202-021
									1					700-1202-022
									2					700-1202-024
									3					700-1202-028
									4					700-1202-042
									6					700-1202-032
									7					700-1202-020
									9					700-1202-034
								1	1					700-0201-005
									2					700-0201-005 HAST C
									3					700-0201-036
									6					700-0002-360
									7					700-0202-036
									8					700-0001-022
									9					700-0002-023
								Z	Z					SEE SHEET 9 FOR A LIST OF OTHER APPROVED INTEGRAL SENSING ELEMENTS
													f	f = A-F, G, H, J, K, L OR Z
														INSERTION LENGTH/COTE SHIELD LENGTH
													A	6"/2" & 152.4mm/50.8mm
													B	12"/2" & 304.8mm/50.8mm
													C	12"/3.5" & 304.8mm/88.9mm
													D	18"/2" & 457.2mm/50.8mm
													E	18"/3.5" & 457.2mm/88.9mm
													F	18"/10" & 457.2mm/254mm
													G	18"/NO CSL & 457.2mm/NO CSL
													H	36"/10" & 914.4mm/254mm
													J	36"/NO CSL & 914.4mm/NO CSL
													K	48"/10" & 1219.2mm/254mm
													L	60"/10" & 1524mm/254mm
													Z	OTHER
													1	18"/6" & 457.2mm/152.4mm
													2	12"/6" & 304.8mm/152.4mm

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SCALE NONE
UNLESS OTHERWISE STATED
ALL DIMENSIONS IN INCHES (MM)
DR. JJS 12-6-13
CK 12-11-13

CERTIFIED by
PO #
ENG
USER
DE #

ISS.	EDO/DSR NO.	APP'D	DATE
12	12-13-108		
11	10-13-105	SGA	10-28-13
10	8-10-107	THP	1-18-11
9	8-10-107	NOT RELEASED	

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FAX 215-674-2731

FM/FMc APPROVED INTEGRAL
2-WIRE INTELLIPOINT
MODEL NUMBERING SYSTEM
SIL SYSTEMS

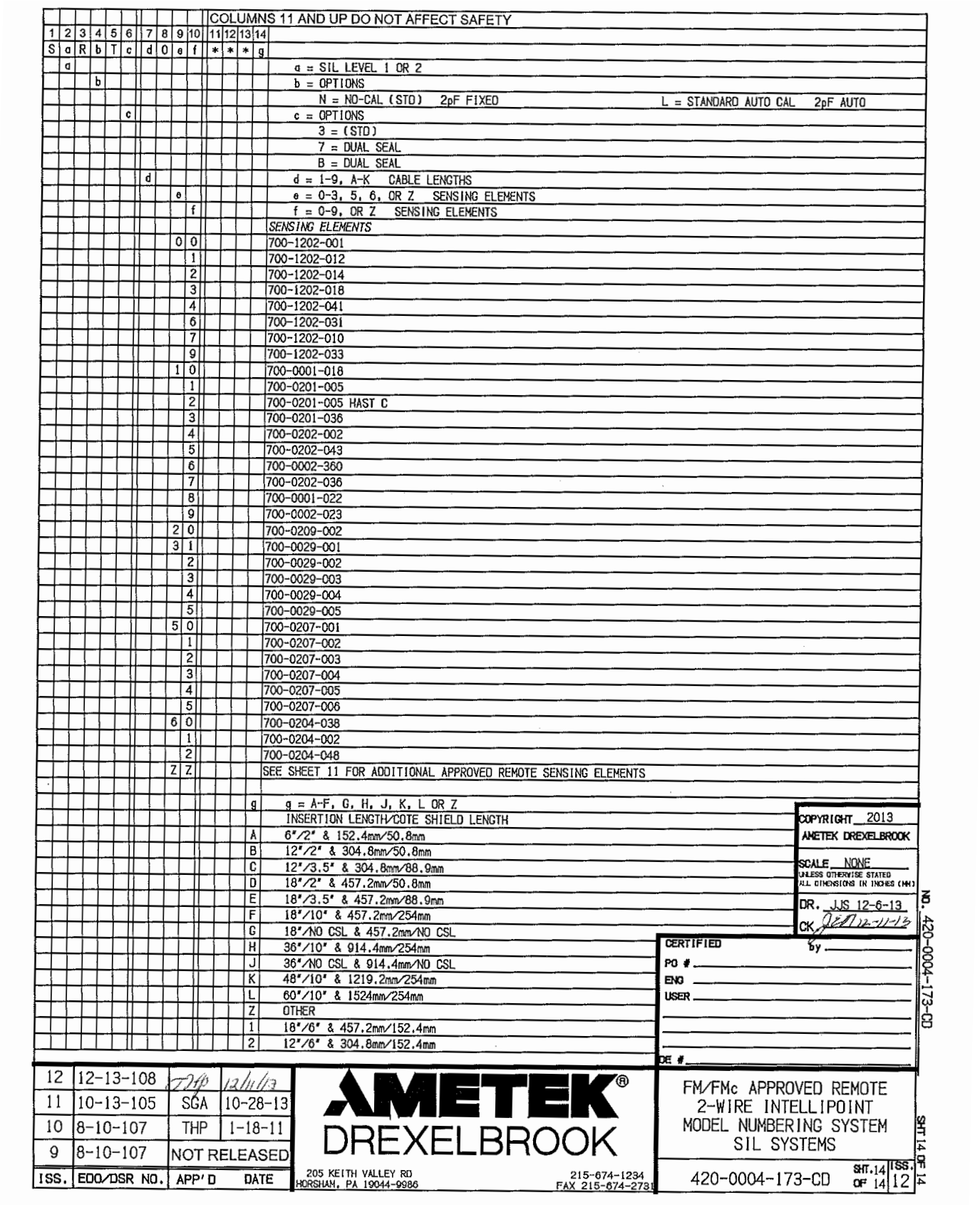
420-0004-173-CD

SHT. 13 OF 14 ISS. 12

NO. 420-0004-173-CD

SHT 13 OF 14

6.1 FM / FMc Control Drawings (Continued)



COLUMNS 11 AND UP DO NOT AFFECT SAFETY

1	2	3	4	5	6	7	8	9	10	11	12	13	14
S	a	R	b	T	c	d	0	e	f	*	*	*	g

a = SIL LEVEL 1 OR 2

b = OPTIONS
N = NO-CAL (STD) 2pF FIXED
L = STANDARD AUTO CAL 2pF AUTO

c = OPTIONS
3 = (STD)
7 = DUAL SEAL
B = DUAL SEAL

d = 1-9, A-K CABLE LENGTHS

e = 0-3, 5, 6, OR Z SENSING ELEMENTS

f = 0-9, OR Z SENSING ELEMENTS

SENSING ELEMENTS

0	0	700-1202-001
	1	700-1202-012
	2	700-1202-014
	3	700-1202-018
	4	700-1202-041
	6	700-1202-031
	7	700-1202-010
	9	700-1202-033
1	0	700-0001-018
	1	700-0201-005
	2	700-0201-005 HAST C
	3	700-0201-036
	4	700-0202-002
	5	700-0202-043
	6	700-0002-360
	7	700-0202-036
	8	700-0001-022
	9	700-0002-023
2	0	700-0209-002
3	1	700-0029-001
	2	700-0029-002
	3	700-0029-003
	4	700-0029-004
	5	700-0029-005
5	0	700-0207-001
	1	700-0207-002
	2	700-0207-003
	3	700-0207-004
	4	700-0207-005
	5	700-0207-006
6	0	700-0204-038
	1	700-0204-002
	2	700-0204-048
Z	Z	SEE SHEET 11 FOR ADDITIONAL APPROVED REMOTE SENSING ELEMENTS

g = A-F, G, H, J, K, L OR Z

g	INSERTION LENGTH/COTE SHIELD LENGTH
A	6"/2" & 152.4mm/50.8mm
B	12"/2" & 304.8mm/50.8mm
C	12"/3.5" & 304.8mm/88.9mm
D	18"/2" & 457.2mm/50.8mm
E	18"/3.5" & 457.2mm/88.9mm
F	18"/10" & 457.2mm/254mm
G	18"/NO CSL & 457.2mm/NO CSL
H	36"/10" & 914.4mm/254mm
J	36"/NO CSL & 914.4mm/NO CSL
K	48"/10" & 1219.2mm/254mm
L	60"/10" & 1524mm/254mm
Z	OTHER
1	18"/6" & 457.2mm/152.4mm
2	12"/6" & 304.8mm/152.4mm

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DR. JJS 12-6-13
CK JEM 12-11-13

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PO #
ENG
USER
DE #

NO. 420-0004-173-CD

ISS.	EDO/DSR NO.	APP'D	DATE
12	12-13-108	THP	12/11/13
11	10-13-105	SGA	10-28-13
10	8-10-107	THP	1-18-11
9	8-10-107	NOT RELEASED	

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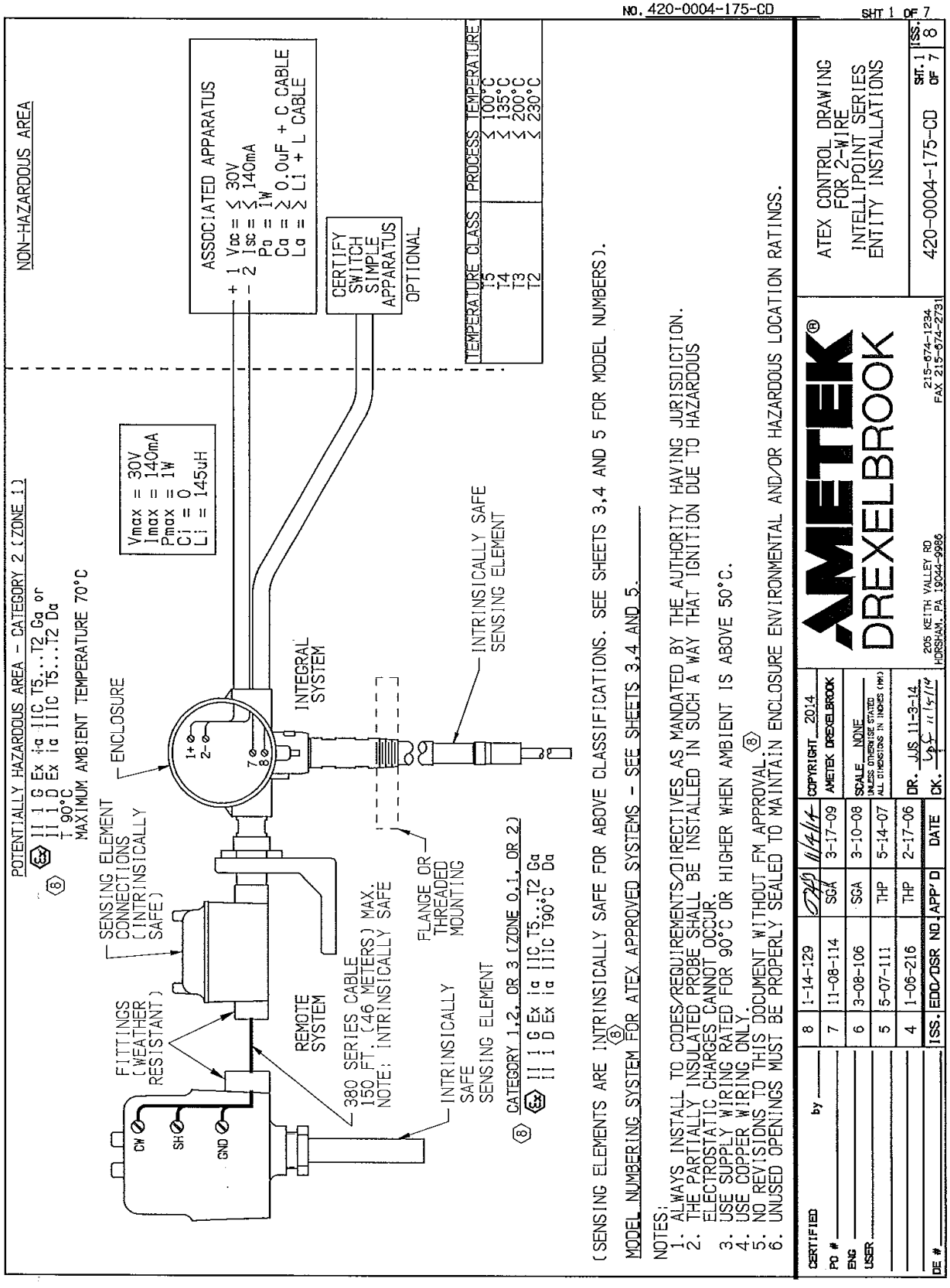
FM/FMc APPROVED REMOTE
2-WIRE INTELLIPOINT
MODEL NUMBERING SYSTEM
SIL SYSTEMS

420-0004-173-CD SHT. 14 OF 14 ISS. 12

SHT 14 OF 14

6.2 ATEX Control Drawings


NO. 420-0004-175-CD
SHT 1 OF 7
NON-HAZARDOUS AREA
POTENTIALLY HAZARDOUS AREA – CATEGORY 2 (ZONE 1)
⑧ II 1 G Ex ia IIC T5...T2 Ga or
II 1 D Ex ia IIIC T5...T2 Da
T 90°C
MAXIMUM AMBIENT TEMPERATURE 70°C
ENCLOSURE
SENSING ELEMENT CONNECTIONS (INTRINSICALLY SAFE)
FITTINGS (WEATHER RESISTANT)
CW
SH
GND
REMOTE SYSTEM
380 SERIES CABLE 150 FT. (46 METERS) MAX. NOTE; INTRINSICALLY SAFE
INTRINSICALLY SAFE SENSING ELEMENT
FLANGE OR THREADED MOUNTING
INTEGRAL SYSTEM
INTRINSICALLY SAFE SENSING ELEMENT
⑧ CATEGORY 1,2, OR 3 (ZONE 0,1, OR 2)
II 1 G Ex ia IIC T5...T2 Ga
II 1 D Ex ia IIIC T90°C Da
Vmax = 30V
Imax = 140mA
Pmax = 1W
Ci = 0
Li = 145uH
ASSOCIATED APPARATUS
+ 1 Voc = ≤ 30V
– 2 Isc = ≤ 140mA
Po = ≤ 1W
Ca = ≥ 0.0uF + C CABLE
La = ≥ Li + L CABLE
CERTIFY SWITCH SIMPLE APPARATUS
OPTIONAL
TEMPERATURE CLASS | PROCESS TEMPERATURE
T5 ≤ 100°C
T4 ≤ 135°C
T3 ≤ 200°C
T2 ≤ 230°C
(SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEETS 3,4 AND 5 FOR MODEL NUMBERS).
MODEL NUMBERING SYSTEM FOR ⑧ ATEX APPROVED SYSTEMS – SEE SHEETS 3,4 AND 5.
NOTES:
1. ALWAYS INSTALL TO CODES/REQUIREMENTS/DIRECTIVES AS MANDATED BY THE AUTHORITY HAVING JURISDICTION.
2. THE PARTIALLY INSULATED PROBE SHALL BE INSTALLED IN SUCH A WAY THAT IGNITION DUE TO HAZARDOUS ELECTROSTATIC CHARGES CANNOT OCCUR.
3. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
4. USE COPPER WIRING ONLY.
5. NO REVISIONS TO THIS DOCUMENT WITHOUT FM APPROVAL. ⑧
6. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED by
PO #
ENG
USER
DE #
8 1-14-129
7 11-08-114 SGA 3-17-09
6 3-08-106 SGA 3-10-08
5 5-07-111 THP 5-14-07
4 1-06-216 THP 2-17-06
ISS. EDC/DSR NO. APP'D DATE
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CK.
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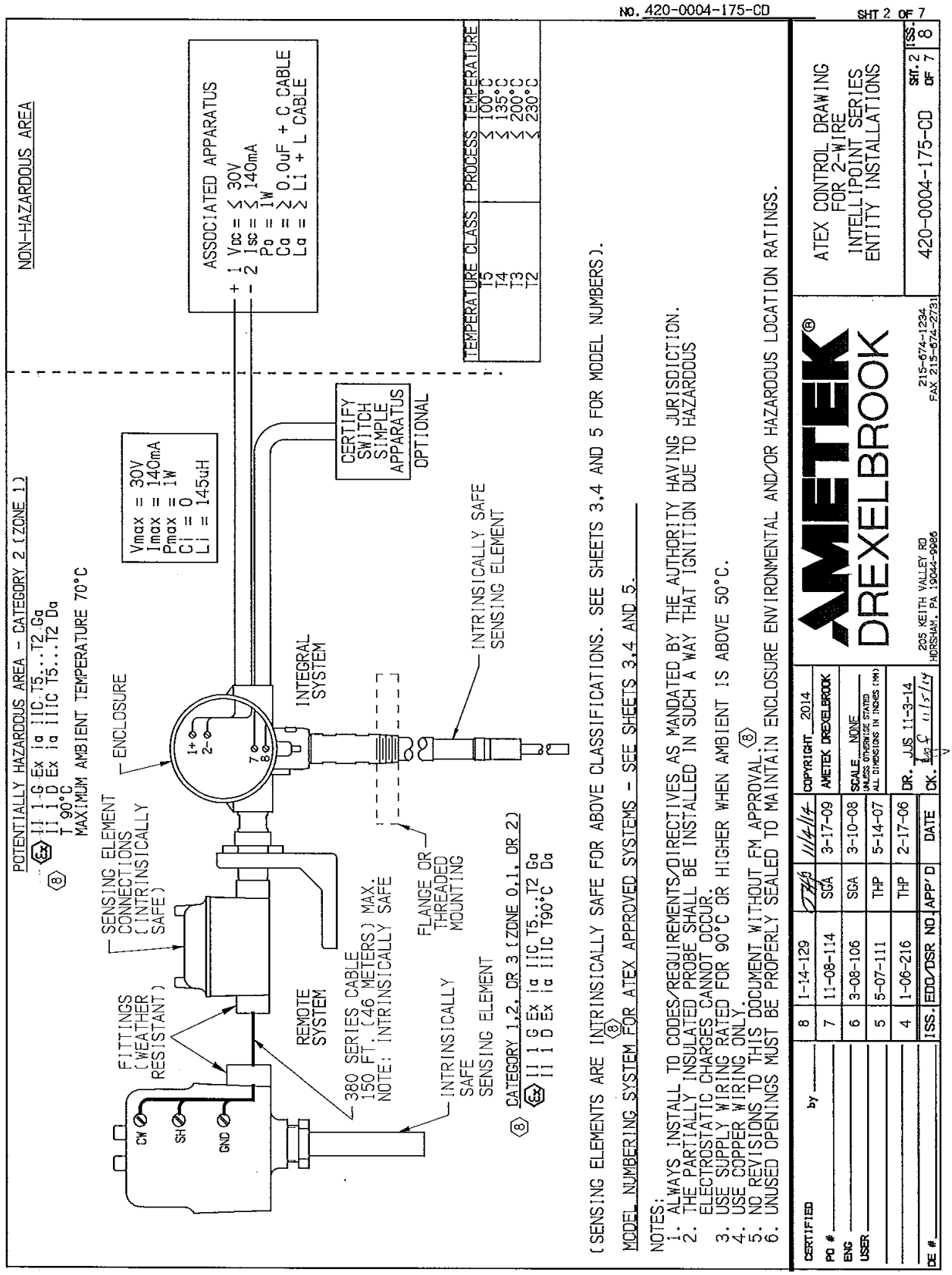
HORSHAM, PA 19044-9986
215-674-1234
FAX 215-674-2731
ATEX CONTROL DRAWING
FOR 2-WIRE
INTELLIPOINT SERIES
ENTITY INSTALLATIONS
420-0004-175-CD
SHT. 1 OF 7
ISS. 8

6.2 ATEX Control Drawings (Continued)


NO. 420-0004-175-CD
SHT 2 OF 7
NON-HAZARDOUS AREA
POTENTIALLY HAZARDOUS AREA – CATEGORY 2 (ZONE 1)
ASSOCIATED APPARATUS
+ 1 Voc = ≤ 30V
- 2 Isc = ≤ 140mA
Po = 1W
Ca = ≥ 0.0uF + C CABLE
La = ≥ Li + L CABLE
TEMPERATURE CLASS | PROCESS TEMPERATURE
T5 ≤ 100°C
T4 ≤ 135°C
T3 ≤ 200°C
T2 ≤ 230°C
Vmax = 30V
Imax = 140mA
Pmax = 1W
Ci = 0
Li = 145uH
CERTIFY SWITCH SIMPLE APPARATUS OPTIONAL
ENCLOSURE
INTEGRAL SYSTEM
INTRINSICALLY SAFE SENSING ELEMENT
SENSING ELEMENT CONNECTIONS (INTRINSICALLY SAFE)
FITTINGS (WEATHER RESISTANT)
REMOTE SYSTEM
380 SERIES CABLE 150 FT. (46 METERS) MAX. NOTE: INTRINSICALLY SAFE
FLANGE OR THREADED MOUNTING
INTRINSICALLY SAFE SENSING ELEMENT
CW
SH
GND
(SENSING ELEMENTS ARE INTRINSICALLY SAFE FOR ABOVE CLASSIFICATIONS. SEE SHEETS 3,4 AND 5 FOR MODEL NUMBERS).
MODEL NUMBERING SYSTEM FOR ATEX APPROVED SYSTEMS – SEE SHEETS 3,4 AND 5.
NOTES:
1. ALWAYS INSTALL TO CODES/REQUIREMENTS/DIRECTIVES AS MANDATED BY THE AUTHORITY HAVING JURISDICTION.
2. THE PARTIALLY INSULATED PROBE SHALL BE INSTALLED IN SUCH A WAY THAT IGNITION DUE TO HAZARDOUS ELECTROSTATIC CHARGES CANNOT OCCUR.
3. USE SUPPLY WIRING RATED FOR 90°C OR HIGHER WHEN AMBIENT IS ABOVE 50°C.
4. USE COPPER WIRING ONLY.
5. NO REVISIONS TO THIS DOCUMENT WITHOUT FM APPROVAL.
6. UNUSED OPENINGS MUST BE PROPERLY SEALED TO MAINTAIN ENCLOSURE ENVIRONMENTAL AND/OR HAZARDOUS LOCATION RATINGS.
CERTIFIED
PO #
ENG
USER
DE #
ISS. | EDD/DSR NO. | APP'D | DATE
8 | 1-14-129 | SGA | 11/4/14
7 | 11-08-114 | SGA | 3-17-09
6 | 3-08-106 | SGA | 3-10-08
5 | 5-07-111 | THP | 5-14-07
4 | 1-06-216 | THP | 2-17-06
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DR. JJS 11-3-14
CK. 11/5/14
AMETEK DREXELBROOK
205 KEITH VALLEY RD HORSHAM, PA 19044-9986
215-674-1234 FAX 215-672-2731
ATEX CONTROL DRAWING FOR 2-WIRE INTELLIPOINT SERIES ENTITY INSTALLATIONS
420-0004-175-CD
SHT. 2 OF 7
ISS. 8

6.2 ATEX Control Drawings (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	
R	a	T	b	0	0	0	c	*	*	*	d	
	a											a = OPTIONS
												N = NO CALIBRATION POINT LEVEL L = STANDARD AUTO CAL
												M = MANUAL SET POINT T = 10pf AUTO CAL
												H = HI SENSITIVITY V = 10pf FIXED
												G = MANUAL SET POINT HI SENSITIVITY P = HI SENSITIVITY .5pf FIXED
			b									b = 2
			2									M20 ATEX SYSTEMS (8)
							c					c = 0-4
												SENSING ELEMENTS
						0	0					700-1202-001
							1					700-1202-012
							2					700-1202-014
							3					700-1202-018
							4					700-1202-041
							6					700-1202-032
							7					700-1202-020
							9					700-1202-034
						1	1					700-0201-005 INTRINSICALLY SAFE SENSING ELEMENT
							2					700-0201-005 HAST C INTRINSICALLY SAFE SENSING ELEMENT
							3					700-0201-036 INTRINSICALLY SAFE SENSING ELEMENT
							6					700-0002-360 INTRINSICALLY SAFE SENSING ELEMENT
							7					700-0202-036 INTRINSICALLY SAFE SENSING ELEMENT
							8					700-0001-022 INTRINSICALLY SAFE SENSING ELEMENT
							9					700-0002-023 INTRINSICALLY SAFE SENSING ELEMENT
						Z	Z					SEE SHEET 5 FOR ADDITIONAL APPROVED INTRINSICALLY SAFE SENSING ELEMENTS
									*	*	*	SEE MOUNTING CHART
											d	d = A-F, G, H, J, K, L OR Z
												INSERTION LENGTH/COTE SHIELD LENGTH
											A	6"/2" & 152.4mm/50.8mm
											B	12"/2" & 304.8mm/50.8mm
											C	12"/3.5" & 304.8mm/88.9mm
											D	18"/2" & 457.2mm/50.8mm
											E	18"/3.5" & 457.2mm/88.9mm
											F	18"/10" & 457.2mm/254mm
											G	18"/NO CSL & 457.2mm
											H	36"/10" & 914.4mm/254mm
											J	36"/NO CSL & 914.4mm
											K	48"/10" & 1219.2mm/254mm
											L	60"/10" & 1524mm/254mm
											Z	OTHER
											1	18"/6" & 457.2mm/152.4mm
											2	12"/6" & 304.8mm/152.4mm

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ALL DIMENSIONS IN INCHES (IN)

DR. JJS 11-3-14
Up £ 11/5/14

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PO #
ENG
USER
DE #

NO. 420-0004-175-CD

ISS.	EDO/DSR NO.	APP'D	DATE
8	1-14-129	THP	11/4/14
7	11-08-114	SGA	3-17-09
6	3-08-106	SGA	3-10-08
5	5-07-111	THP	5-14-07

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ATEX APPROVED
2-WIRE INTELLIPOINT
MODEL NUMBERING SYSTEM
(INTEGRAL)

420-0004-175-CD SHT. 3 OF 7 ISS. 8

SHT 3 OF 7

6.2 ATEX Control Drawings (Continued)

								COLUMNS 9 AND UP DO NOT AFFECT SAFETY				
1	2	3	4	5	6	7	8	9	10	11	12	
R	a	T	2	b	0	c	d	*	*	*	e	
	a											a = OPTIONS
												N = NO CALIBRATION POINT LEVEL L = STANDARD AUTO CAL
												M = MANUAL SET POINT T = 10pf AUTO CAL
												H = HI SENSITIVITY V = 10pf FIXED
												G = MANUAL SET POINT HI SENSITIVITY P = HI SENSITIVITY .5pf FIXED
				b								b = 1-9, A-K CABLE OPTIONS (REMOTE)
						c						c = 0-3, 5, 6, OR Z SENSING ELEMENTS
							d					d = 0-6, & 8, OR Z SENSING ELEMENTS
												SENSING ELEMENTS
						0	0					700-1202-001
							1					700-1202-012
							2					700-1202-014
							3					700-1202-018
							4					700-1202-041
							6					700-1202-031
							7					700-1202-010
							9					700-1202-033
						1	0					700-0001-018 INTRINSICALLY SAFE SENSING ELEMENT
							1					700-0201-005 INTRINSICALLY SAFE SENSING ELEMENT
							2					700-0201-005 HAST C INTRINSICALLY SAFE SENSING ELEMENT
							3					700-0201-036 INTRINSICALLY SAFE SENSING ELEMENT
							4					700-0202-002 INTRINSICALLY SAFE SENSING ELEMENT
							5					700-0202-043 INTRINSICALLY SAFE SENSING ELEMENT
							6					700-0002-360 INTRINSICALLY SAFE SENSING ELEMENT
							7					700-0202-036 INTRINSICALLY SAFE SENSING ELEMENT
							8					700-0001-022 INTRINSICALLY SAFE SENSING ELEMENT
							9					700-0002-023 INTRINSICALLY SAFE SENSING ELEMENT
						2	0					700-0209-002 INTRINSICALLY SAFE SENSING ELEMENT
						3	1					700-0029-001 INTRINSICALLY SAFE SENSING ELEMENT
							2					700-0029-002 INTRINSICALLY SAFE SENSING ELEMENT
							3					700-0029-003 INTRINSICALLY SAFE SENSING ELEMENT
							4					700-0029-004 INTRINSICALLY SAFE SENSING ELEMENT
							5					700-0029-005 INTRINSICALLY SAFE SENSING ELEMENT
						5	0					700-0207-001 INTRINSICALLY SAFE SENSING ELEMENT
							1					700-0207-002 INTRINSICALLY SAFE SENSING ELEMENT
							2					700-0207-003 INTRINSICALLY SAFE SENSING ELEMENT
							3					700-0207-004 INTRINSICALLY SAFE SENSING ELEMENT
							4					700-0207-005 INTRINSICALLY SAFE SENSING ELEMENT
							5					700-0207-006 INTRINSICALLY SAFE SENSING ELEMENT
						6	0					700-0204-038 INTRINSICALLY SAFE SENSING ELEMENT
						6	1					700-0204-002
						6	2					700-0204-048
						Z	Z					SEE SHEET 5 FOR ADDITIONAL APPROVED INTRINSICALLY SAFE SENSING ELEMENTS
											e	e = A-F, G, H, J, K, L OR Z
												INSERTION LENGTH/COTE SHIELD LENGTH
											A	6"/2" & 152.4mm/50.8mm
											B	12"/2" & 304.8mm/50.8mm
											C	12"/3.5" & 304.8mm/88.9mm
											D	18"/2" & 457.2mm/50.8mm
											E	18"/3.5" & 457.2mm/88.9mm
											F	18"/10" & 457.2mm/254mm
											G	18"/NO CSL & 457.2mm
											H	36"/10" & 914.4mm/254mm
											J	36"/NO CSL & 914.4mm
											K	48"/10" & 1219.2mm/254mm
											L	60"/10" & 1524mm/254mm
											Z	OTHER
											1	18"/6" & 457.2mm/152.4mm
											2	12"/6" & 304.8mm/152.4mm

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ALL DIMENSIONS IN INCHES (MM)

DR. JJS 11-3-14
GPF 11/5/14

CERTIFIED
PO #
ENG
USER
DE #

ISS.	EDO/DSR NO.	APP'D	DATE
8	1-14-129	THP	11/4/14
7	11-08-114	SGA	3-17-09
6	3-08-106	SGA	3-10-08
5	5-07-111	THP	5-14-07

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ATEX APPROVED
2-WIRE INTELLIPOINT
MODEL NUMBERING SYSTEM
(REMOTE)

420-0004-175-CD SHT. 4 OF 7 ISS. 8

NO. 420-0004-175-CD SHT 4 OF 7

6.2 ATEX Control Drawings (Continued)

MODEL NUMBERS OF APPROVED INTRINSICALLY SAFE SENSING ELEMENTS

700-mnop-qrs-t LEVEL PROBE

m = FAMILY NO. 0 THROUGH 9, BLANK
n = FAMILY NO. 0 THROUGH 9, BLANK
o = 0 THROUGH 9, BLANK
p = 0 THROUGH 9
q = FAMILY NO. 0 THROUGH 9, BLANK
r = FAMILY NO. 0 THROUGH 9, BLANK
s = FAMILY NO. 0 THROUGH 9
t = 14 CHARACTER EXPANDED NUMBERING SYSTEM, DOES NOT AFFECT SAFETY

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SCALE NONE
UNLESS OTHERWISE STATED
ALL DIMENSIONS IN INCHES (IN)

DR. JJS 11-3-14
tpf 11/5/14

CERTIFIED
PO #
ENG
USER
DE #

NO. 420-0004-175-CD

ISS.	EDO/DSR NO.	APP'D	DATE
8	1-14-129	THP	11/4/14
7	11-08-114	SGA	3-17-09
6	3-08-106	SGA	3-10-08
5	5-07-111	THP	5-14-07

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ATEX APPROVED
ADDITIONAL INTRINSICALLY
SAFE SENSING ELEMENTS
(REMOTE)

420-0004-175-CD SHT. 5 OF 7 ISS. 8

SHT 5 OF 7

6.2 ATEX Control Drawings (Continued)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	
S	a	R	b	T	c	0	0	0	d	*	*	*	e	
	a													a = SIL LEVEL 1 OR 2
			b											b = OPTIONS
														N = NO CALIBRATION POINT LEVEL 2pF FIXED
														L = STANDARD AUTO CAL 2pF AUTO
					c									c = 2
					2									M20 ATEX SYSTEMS ⟨8⟩
									d					d = 0-4
														SENSING ELEMENTS
								0	0					700-1202-001
									1					700-1202-012
									2					700-1202-014
									3					700-1202-018
									4					700-1202-041
									6					700-1202-032
									7					700-1202-020
									9					700-1202-034
								1	1					700-0201-005 INTRINSICALLY SAFE SENSING ELEMENT
									2					700-0201-005 HAST C INTRINSICALLY SAFE SENSING ELEMENT
									3					700-0201-036 INTRINSICALLY SAFE SENSING ELEMENT
									6					700-0002-360 INTRINSICALLY SAFE SENSING ELEMENT
									7					700-0202-036 INTRINSICALLY SAFE SENSING ELEMENT
									8					700-0001-022 INTRINSICALLY SAFE SENSING ELEMENT
									9					700-0002-023 INTRINSICALLY SAFE SENSING ELEMENT
									Z	Z				SEE SHEET 5 FOR ADDITIONAL APPROVED INTRINSICALLY SAFE SENSING ELEMENTS
											*	*	*	SEE MOUNTING CHART
													e	e = A-F, G, H, J, K, L OR Z
														INSERTION LENGTH/COTE SHIELD LENGTH
													A	6"/2" & 152.4mm/50.8mm
													B	12"/2" & 304.8mm/50.8mm
													C	12"/3.5" & 304.8mm/88.9mm
													D	18"/2" & 457.2mm/50.8mm
													E	18"/3.5" & 457.2mm/88.9mm
													F	18"/10" & 457.2mm/254mm
													G	18"/NO CSL & 457.2mm
													H	36"/10" & 914.4mm/254mm
													J	36"/NO CSL & 914.4mm
													K	48"/10" & 1219.2mm/254mm
													L	60"/10" & 1524mm/254mm
													Z	OTHER
													1	18"/6" & 457.2mm/152.4mm
													2	12"/6" & 304.8mm/152.4mm

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DR. JJS 11-3-14

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PO #

ENG

USER

DE #

ISS.	EDO/DSR NO.	APP'D	DATE
8	1-14-129	THP	11/4/14
7	11-08-114	SGA	3-17-09
6	3-08-106	SGA	3-10-08
5	5-07-111	THP	5-14-07

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ATEX APPROVED
2-WIRE INTELLIPOINT
MODEL NUMBERING SYSTEM
(INTEGRAL)
SIL SYSTEMS

420-0004-175-CD SHT. 6 OF 7 ISS. 8

NO. 420-0004-175-CD

SHT 6 OF 7

6.2 ATEX Control Drawings (Continued)

										COLUMNS 11 AND UP DO NOT AFFECT SAFETY				
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
S	a	R	b	T	2	c	0	d	e	*	*	*	f	
	a													a = SIL LEVEL 1 OR 2
			b											b = OPTIONS
														N = NO CALIBRATION POINT LEVEL 2pF FIXED
														L = STANDARD AUTO CAL 2pF AUTO
						c								c = 1-9, A-K CABLE OPTIONS (REMOTE)
								d						d = 0-3, 5, 6, OR Z SENSING ELEMENTS
									e					e = 0-6, & 8, OR Z SENSING ELEMENTS
														SENSING ELEMENTS
								0	0					700-1202-001
									1					700-1202-012
									2					700-1202-014
									3					700-1202-018
									4					700-1202-041
									6					700-1202-031
									7					700-1202-010
									9					700-1202-033
								1	0					700-0001-018 INTRINSICALLY SAFE SENSING ELEMENT
									1					700-0201-005 INTRINSICALLY SAFE SENSING ELEMENT
									2					700-0201-005 HAST C INTRINSICALLY SAFE SENSING ELEMENT
									3					700-0201-036 INTRINSICALLY SAFE SENSING ELEMENT
									4					700-0202-002 INTRINSICALLY SAFE SENSING ELEMENT
									5					700-0202-043 INTRINSICALLY SAFE SENSING ELEMENT
									6					700-0002-360 INTRINSICALLY SAFE SENSING ELEMENT
									7					700-0202-036 INTRINSICALLY SAFE SENSING ELEMENT
									8					700-0001-022 INTRINSICALLY SAFE SENSING ELEMENT
									9					700-0002-023 INTRINSICALLY SAFE SENSING ELEMENT
								2	0					700-0209-002 INTRINSICALLY SAFE SENSING ELEMENT
								3	1					700-0029-001 INTRINSICALLY SAFE SENSING ELEMENT
									2					700-0029-002 INTRINSICALLY SAFE SENSING ELEMENT
									3					700-0029-003 INTRINSICALLY SAFE SENSING ELEMENT
									4					700-0029-004 INTRINSICALLY SAFE SENSING ELEMENT
									5					700-0029-005 INTRINSICALLY SAFE SENSING ELEMENT
								5	0					700-0207-001 INTRINSICALLY SAFE SENSING ELEMENT
									1					700-0207-002 INTRINSICALLY SAFE SENSING ELEMENT
									2					700-0207-003 INTRINSICALLY SAFE SENSING ELEMENT
									3					700-0207-004 INTRINSICALLY SAFE SENSING ELEMENT
									4					700-0207-005 INTRINSICALLY SAFE SENSING ELEMENT
									5					700-0207-006 INTRINSICALLY SAFE SENSING ELEMENT
								6	0					700-0204-038 INTRINSICALLY SAFE SENSING ELEMENT
								6	1					700-0204-002
								6	2					700-0204-048
								Z	Z					SEE SHEET 5 FOR ADDITIONAL APPROVED INTRINSICALLY SAFE SENSING ELEMENTS
													f	f = A-F, G, H, J, K, L OR Z
														INSERTION LENGTH/COTE SHIELD LENGTH
													A	6"/2" & 152.4mm/50.8mm
													B	12"/2" & 304.8mm/50.8mm
													C	12"/3.5" & 304.8mm/88.9mm
													D	18"/2" & 457.2mm/50.8mm
													E	18"/3.5" & 457.2mm/88.9mm
													F	18"/10" & 457.2mm/254mm
													G	18"/NO CSL & 457.2mm
													H	36"/10" & 914.4mm/254mm
													J	36"/NO CSL & 914.4mm
													K	48"/10" & 1219.2mm/254mm
													L	60"/10" & 1524mm/254mm
													Z	OTHER
													1	18"/6" & 457.2mm/152.4mm
													2	12"/6" & 304.8mm/152.4mm

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NO. 420-0004-175-CD

ISS.	EDO/DSR NO.	APP'D	DATE
8	1-14-129	THP	11/4/14
7	11-08-114	SGA	3-17-09
6	3-08-106	SGA	3-10-08
5	5-07-111	THP	5-14-07

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ATEX APPROVED
2-WIRE INTELLIPOINT
MODEL NUMBERING SYSTEM
(REMOTE)
SIL SYSTEMS

420-0004-175-CD SHT. 7 OF 7 ISS. 8

SHT 7 OF 7

6.3 ATEX Approval Certificate

420-0004-497		Sht. 1 of 4	APP'D BY SGA
ISSUE	EDO NO.	APP'D	DATE
1	2-15-113	SG	2-20-15

1 EC-TYPE EXAMINATION CERTIFICATE

2 **Equipment or Protective systems intended for use in Potentially Explosive Atmospheres - Directive 94/9/EC**

3 **EC-Type Examination Certificate No:** **FM14ATEX0049**

4 **Equipment or protective system: (Type Reference and Name)** **R*L2-****, R*L2-0***, R*T2-*0**, R*T2-00**, S*R*T2*0**, and S*R*T2-00** IntelliPoint RF Transmitter with Integral and Remote Sensor**

5 **Name of Applicant:** **AMETEK Drexelbrook**

6 **Address of Applicant:** **205 Keith Valley Road, Horsham, PA 19044 USA**

7 This equipment or protective system and any acceptable variation thereto is specified in the schedule to this certificate and documents therein referred to.

8 FM Approvals Ltd, notified body number 1725 in accordance with Article 9 of Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment intended for use in potentially explosive atmospheres given in Annex II to the Directive.

The examination and test results are recorded in confidential report number:

3051517 dated 8th January 2015

9 Compliance with the Essential Health and Safety Requirements, with the exception of those identified in item 15 of the schedule to this certificate, has been assessed by compliance with the following documents:

EN 60079-0+A11:2013, EN60079-1:2007, EN60079-11:2012, EN 60079-26:2007, EN 60079-31:2013, EN 60529+A2:2013

10 If the sign 'X' is placed after the certificate number, it indicates that the equipment is subject to specific conditions of use specified in the schedule to this certificate.

11 This EC-Type Examination certificate relates only to the design, examination and tests of the specified equipment or protective system in accordance to the directive 94/9/EC. Further requirements of the Directive apply to the manufacturing process and supply of this equipment or protective system. These are not covered by this certificate.

Mick Gower
on=Mick Gower, o=FM Approvals, ou,
email=mick.gower@fmapprovals.com,
c=GB
2015.01.23 15:59:21 Z

Mick Gower
Certification Manager, FM Approvals Ltd.

Issue date: 23rd January 2015

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6.3 ATEX Approval Certificate (Continued)

420-0004-497	Sht. 2 of 4	ISSUE 1

SCHEDULE

to EC-Type Examination Certificate No. FM14ATEX0049

12 The marking of the equipment or protective system shall include:

IntelliPoint Transmitter with Remote Sensor
II 2 (1) G Ex d [ia] IIC T5...T2 -30°C ≤ TAMB ≤ +70°C; IP66
II 2 (1) D Ex tb [ia] IIIC T90°C -30°C ≤ TAMB ≤ +70°C; IP66

IntelliPoint Transmitter with Integral Sensor
II 2 (1) G Ex d [ia] IIC T5...T2 -30°C ≤ TAMB ≤ +70°C; IP66
II 2 (1) D Ex tb [ia] IIIC T90°C -30°C ≤ TAMB ≤ +70°C; IP66

IntelliPoint Two-Wire Transmitter with Remote Sensor
II 1 G Ex ia IIC T5...T2 -30°C ≤ TAMB ≤ +70°C; IP66
II 1 D Ex ia IIIC T90°C -30°C ≤ TAMB ≤ +70°C; IP66

IntelliPoint Two-Wire Transmitter with Integral Sensor
II 1 G Ex ia IIC T5...T2 -30°C ≤ TAMB ≤ +70°C; IP66
II 1 D Ex ia IIIC T90°C -30°C ≤ TAMB ≤ +70°C; IP66

SIL IntelliPoint Two-Wire Transmitter with Remote Sensor
II 1 G Ex ia IIC T5...T2 -30°C ≤ TAMB ≤ +70°C; IP66
II 1 D Ex ia IIIC T90°C -30°C ≤ TAMB ≤ +70°C; IP66

SIL IntelliPoint Two-Wire Transmitter with Integral Sensor
II 1 G Ex ia IIC T5...T2 -30°C ≤ TAMB ≤ +70°C; IP66
II 1 D Ex ia IIIC T90°C -30°C ≤ TAMB ≤ +70°C; IP66

700-*, IntelliPoint Sensors
II 1 G Ex ia IIC T5...T2 -30°C ≤ TAMB ≤ +70°C; IP66
II 1 D Ex ia IIIC T90°C -30°C ≤ TAMB ≤ +70°C; IP66

13 **Description of Equipment or Protective System:**

The IntelliPoint RF Point Level System (RxLx) and IntelliPoint RF Two-Wire Point Level System (RxTx) consist of a transmitter, a 700 series level sensor and a 380 series connecting cable used for the remote version of the sensor. The system using the remote sensor may also include an RF filter. The transmitter provides intrinsically safe outputs to the sensing elements. It converts a capacitive level measurement into a relay contact signal. The 700 Series Sensors are passive devices having a capacitance of less than 1µF. The SIL version of the IntelliPoint RF Two-Wire Point Level System (SxTx) is identical in design to the RxTx.

Operation Temperature Ranges:
The ambient operating temperature range of the The IntelliPoint RF Point Level System (RxLx) and IntelliPoint RF Two-Wire Point Level System (RxTx) is -30°C to 70 °C. Process temperature range is -30°C to 230°C.

Electrical data:
The IntelliPoint RF Point Level System transmitter is powered by a maximum voltage of 250VAC and has a maximum power rating of 2.0W. The IntelliPoint RF Two-Wire Point Level System transmitter is powered by a maximum voltage of 30VDC and has a maximum power rating of 1.0W.

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6.3 ATEX Approval Certificate (Continued)

420-0004-497	Sht. 3 of 4	ISSUE 1

SCHEDULE

to EC-Type Examination Certificate No. FM14ATEX0049

Model Options:

RaL2-bcde. IntelliPoint Transmitter with Remote Sensor.
a = Calibration: N, M, H, G, L, T, V, or P.
b = Cable Length: 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, G, H, J, or K.
c = Relays: 1 or 2.
d, e = Sensor, Sensor housing, Spark Protector Assembly: 00 through 04, 06, 07, 09 through 20, 31 through 35, 50 through 55, 60 through 62, or ZZ.

RaL2-0bcd. IntelliPoint Transmitter with Integral Sensor.
a = Calibration: N, M, H, G, L, T, V, or P.
b = Relays: 1 or 2.
c, d = Sensor, Cable: 00, 01, 02, or 03.

RaT2-b0cd. IntelliPoint Two-Wire Transmitter with Remote Sensor.
a = Calibration: N, M, H, G, L, T, V, or P.
b = Cable Length: 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, G, H, J, or K.
c, d = Sensor, Sensor housing, Spark Protector Assembly: 00 through 04, 06, 07, 09 through 20, 31 through 35, 50 through 55, 60 through 62, or ZZ.

Entity Parameters:
Vmax = 30V, Imax = 140 mA, Pi = 1 W, Ci = 0, Li = 145 µH

RaT2-00bc. IntelliPoint Two-Wire Transmitter with Integral Sensor.
a = Calibration: N, M, H, G, L, T, V, or P.
b, c = Sensor, Cable: 00, 01, 02, 03, 04, 06, 07, 09, 11, 12, 13, 16, 17, 18, 19, 25, 26, 27, 28, or ZZ.

Entity Parameters:
Vmax = 30V, Imax = 140 mA, Pi = 1 W, Ci = 0, Li = 145 µH

SaRbT2c0de. SIL IntelliPoint Two-Wire Transmitter with Remote Sensor.
a = SIL Level: Option not evaluated by FM Approvals.
b = Calibration: N, M, H, G, L, T, V, or P.
c = Cable Length 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B, C, D, E, F, G, H, J, or K.
d, e = Sensor, Sensor housing, Spark Protector Assembly: 00 through 04, 06, 07, 09 through 20, 31 through 35, 50 through 55, 60 through 62, or ZZ.

Entity Parameters:
Vmax = 30V, Imax = 140 mA, Pi = 1 W, Ci = 0, Li = 145 µH

SaRbT2-00cd. SIL IntelliPoint Two-Wire Transmitter with Integral Sensor
a = SIL Level: Option not evaluated by FM Approvals.
b = Calibration N, M, H, G, L, T, V, or P.
c, d = Sensor, Cable: 00, 01, 02, 03, 04, 06, 07, 09, 11, 12, 13, 16, 17, 18, 19, 25, 26, 27, 28, or ZZ.

Entity Parameters:
Vmax = 30V, Imax = 140 mA, Pi = 1 W, Ci = 0, Li = 145 µH

700-a, IntelliPoint Sensors.
a = Any 7 digit numeric combination maintaining the limits of 420-0004-146-CD or 420-0004-175-CD.

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6.3 ATEX Approval Certificate (Continued)

420-0004-497	Sht. 4 of 4	ISSUE 1

SCHEDULE

to EC-Type Examination Certificate No. FM14ATEX0049

14 **Specific Conditions of Use:**

None

15 **Essential Health and Safety Requirements:**

The relevant EHSRs that have not been addressed by the standards listed in this certificate have been identified and assessed in the confidential report identified in item 8.

16 **Test and Assessment Procedure and Conditions:**

This EC-Type Examination Certificate is the result of testing of a sample of the product submitted, in accordance with the provisions of the relevant specific standard(s), and assessment of supporting documentation. It does not imply an assessment of the whole production.

Whilst this certificate may be used in support of a manufacturer's claim for CE Marking, FM Approvals Ltd accepts no responsibility for the compliance of the equipment against all applicable Directives in all applications.

This Certificate has been issued in accordance with FM Approvals Ltd's ATEX Certification Scheme.

17 **Schedule Drawings**

A list of the significant parts of the technical documentation is annexed to this certificate and a copy has been kept by the Notified Body.

18 **Certificate History**

Details of the supplements to this certificate are described below:

Date	Description
23rd January 2015	Original Issue.

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6.4 CE Mark Declaration of Conformity

DREXELBROOK

205 Keith Valley Road, Horsham, PA 19044
Telephone: 215-674-1234 Fax: 215-674-2731
www.ametek.com www.drexelbrook.com

AMETEK

420-0004-250		Sht. 1 of 1	APP'D BY SGA
ISSUE	EDO NO.	APP'D	DATE
5	9-11-110	SGA	9-14-11
6	1-15-108	SGA	1-30-15

Declaration of Conformity

AMETEK DREXELBROOK
205 KEITH VALLEY ROAD
HORSHAM, PENNSYLVANIA
USA, 19044

We declare under our sole responsibility that the product **2-Wire IntelliPoint Point** Level Measurement Systems Model Number RXTX2 / SXRXT2 Series which this declaration relates is in conformity with the following
standards and entitled to carry the CE Mark:

Product Type: Measurement, Control Equipment and laboratory
Use following the provisions of the EMC Directive 2004-108-EC
Conforms to the requirements of:

Emissions requirements of:
EN61326-1:2006; Clause 7.2:
CISPR 11 Edition 4:2003 Radiated Emissions, Group 1, Class B
Immunity requirements of EN 61326-1:2006; Table 1
IEC 61000-4:2:2001 Electrostatic Discharge
IEC 61000-4:3:2002 Radiated Immunity
IEC 61000-4-4:2004 EFT/Burst. I/0 leads
IEC 61000Q-4-5:2001 Surge Immunity, I/O leads
IEC 61000-4-6:2003 Conducted Immunity, I/0 Leads
IEC 61000-4-8:1993, A1:2000 Power Frequency Magnetic Fields

Following the provisions of 94/9/EC ATEX Directives,
Conforms to the requirements of:

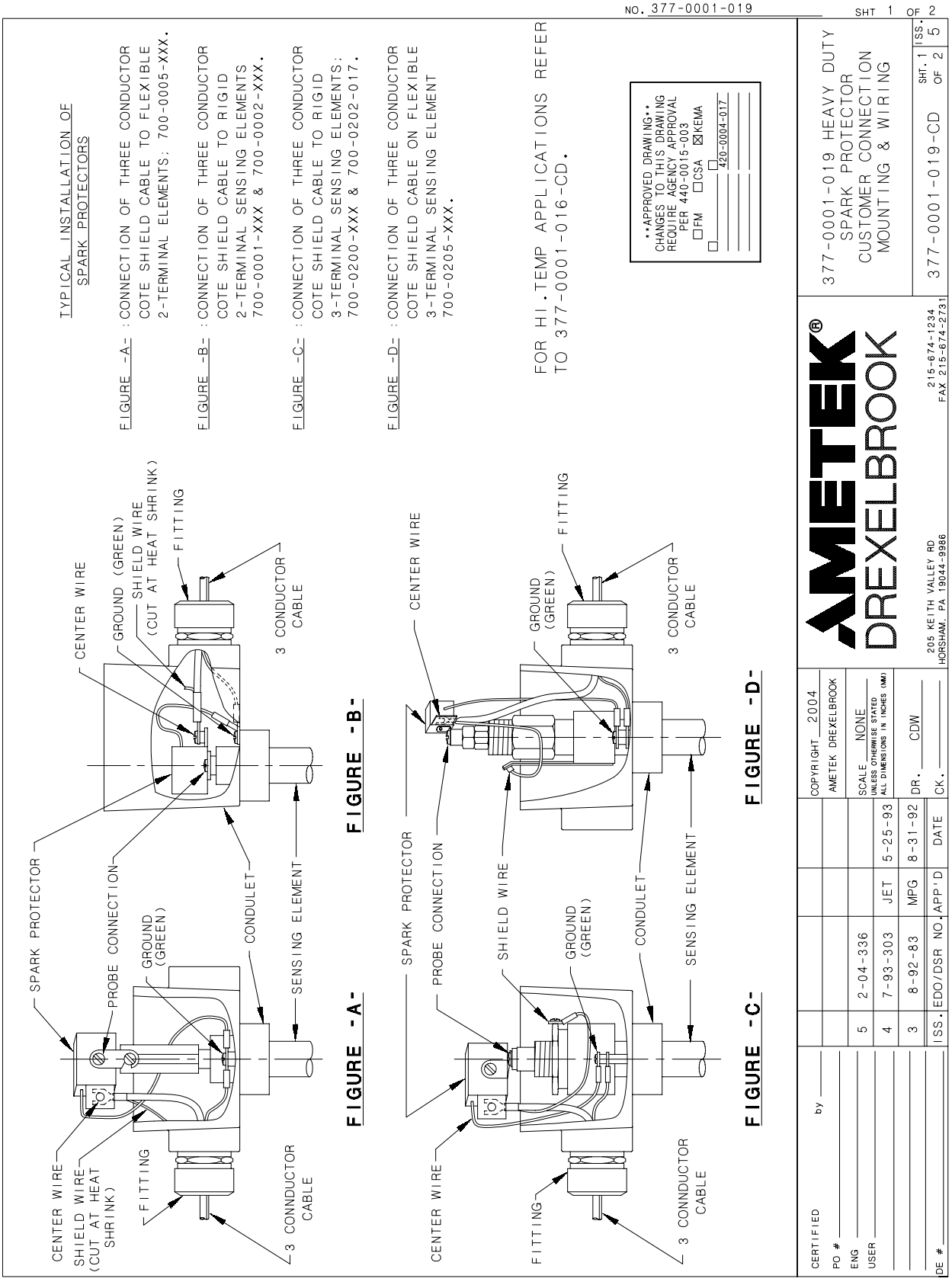
EN 60079-0+A11:2013	Electrical apparatus for explosive gas atmospheres - Part 0: General requirements
EN 60079-1:2007	Explosive atmospheres - Part 1: Equipment protection by flameproof enclosures "d"
EN 60079-11:2012	Explosive atmospheres - Part 11: Equipment protection by Intrinsic safety "I"
EN 60079-26:2007	Explosive atmospheres - Part 26: Equipment with equipment protection level (EPL) Ga
EN 60079-31:2013	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
EN 60529+A2:2013	Degrees of protection provided by enclosures (IP Code)

EC-Type Examination Certificate Number FM14ATEX0049 Notified Body Number 1725

FM Approvals Ltd. 1 Windsor Dials, Windsor, Berkshire, UK SL4 1RS

Steven G. Arnold
Quality Assurance & Product Safety Manager
Issue Date: 1/30/2015

6.5 Mounting and Wiring for Spark Protector Drawings


NO. 377-0001-019
SHT 1 OF 2
TYPICAL INSTALLATION OF SPARK PROTECTORS
FIGURE -A- : CONNECTION OF THREE CONDUCTOR COTE SHIELD CABLE TO FLEXIBLE 2-TERMINAL ELEMENTS: 700-0005-XXX.
FIGURE -B- : CONNECTION OF THREE CONDUCTOR COTE SHIELD CABLE TO RIGID 2-TERMINAL SENSING ELEMENTS 700-0001-XXX & 700-0002-XXX.
FIGURE -C- : CONNECTION OF THREE CONDUCTOR COTE SHIELD CABLE TO RIGID 3-TERMINAL SENSING ELEMENTS: 700-0200-XXX & 700-0202-017.
FIGURE -D- : CONNECTION OF THREE CONDUCTOR COTE SHIELD CABLE ON FLEXIBLE 3-TERMINAL SENSING ELEMENT 700-0205-XXX.
FOR HI.TEMP APPLICATIONS REFER TO 377-0001-016-CD.
APPROVED DRAWING CHANGES TO THIS DRAWING REQUIRE AGENCY APPROVAL PER 440-0015-003
☐FM ☐CSA ☒KEMA
420-0004-017
SPARK PROTECTOR
CENTER WIRE
SHIELD WIRE (CUT AT HEAT SHRINK)
GROUND (GREEN)
PROBE CONNECTION
FITTING
CONDULET
SENSING ELEMENT
3 CONDUCTOR CABLE
3 CONNDUCTOR CABLE
FIGURE -A-
FIGURE -B-
FIGURE -C-
FIGURE -D-
CERTIFIED
by
PO #
ENG
USER
DE #
ISS. | EDO/DSR NO. | APP'D | DATE
5 | 2-04-336 | | | 5-25-93
4 | 7-93-303 | JET | 5-25-93
3 | 8-92-83 | MPG | 8-31-92
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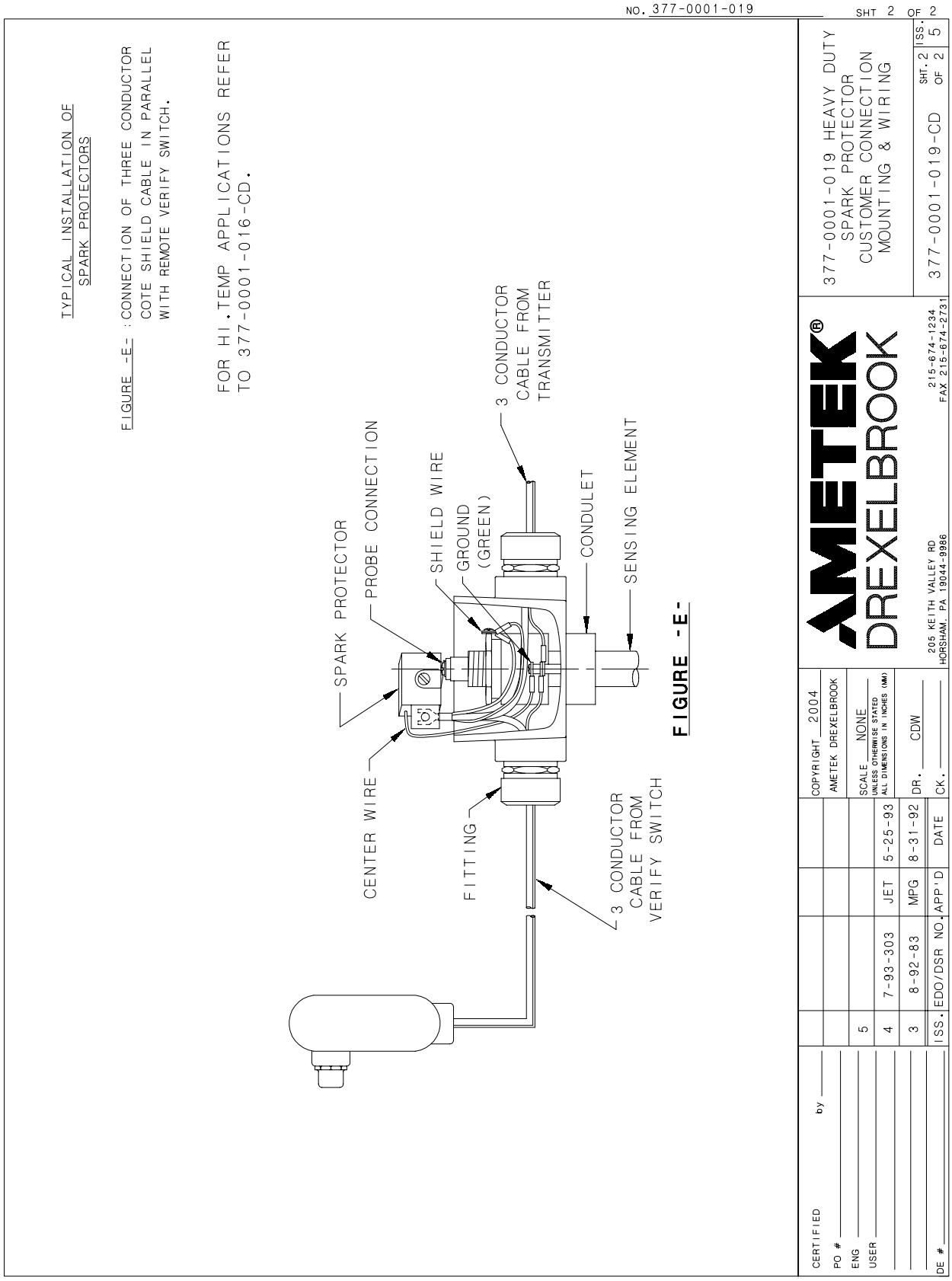
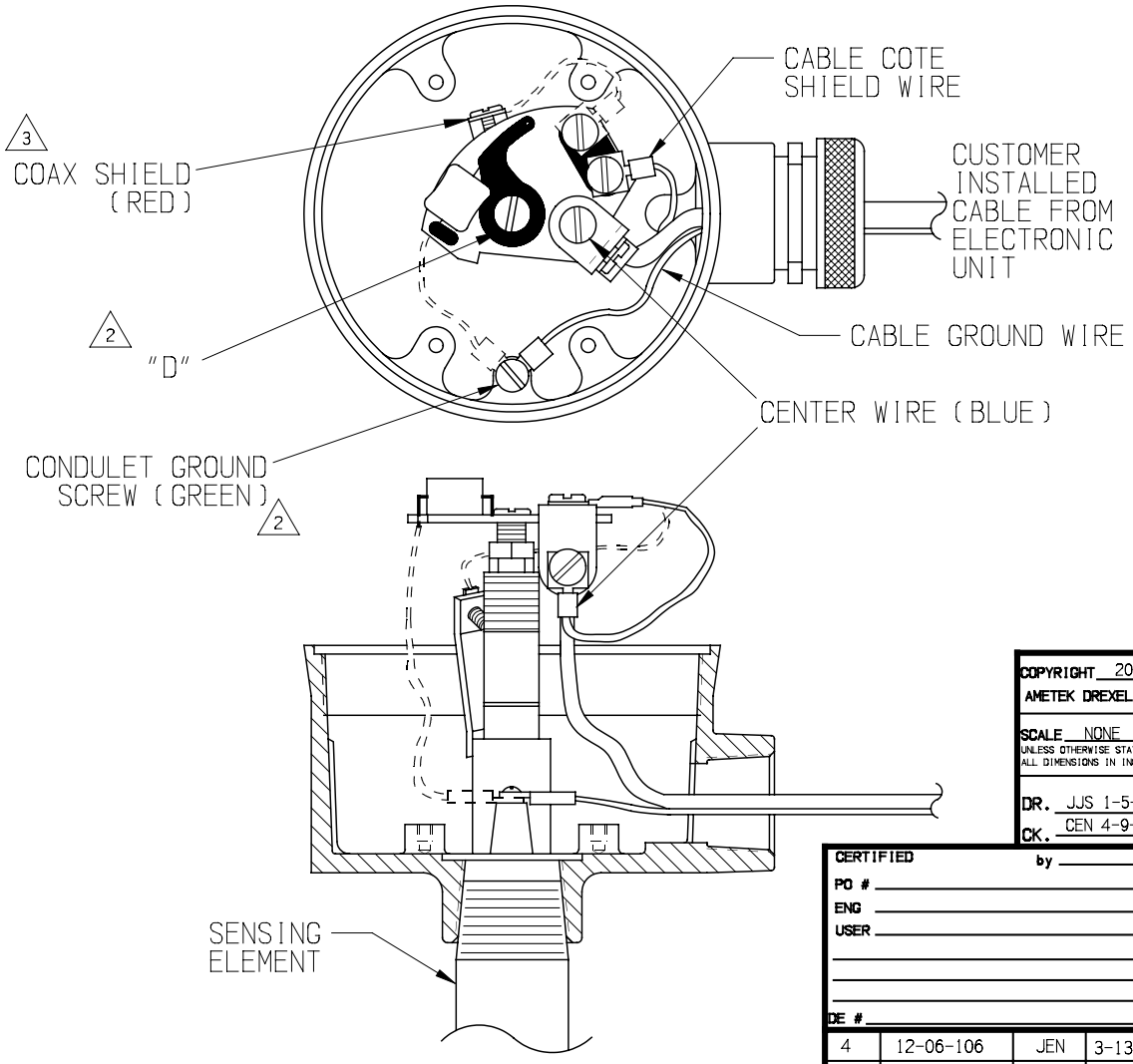
215-674-1234
FAX 215-674-2731
377-0001-019 HEAVY DUTY SPARK PROTECTOR CUSTOMER CONNECTION MOUNTING & WIRING
377-0001-019-CD
SHT. 1 OF 2
ISS. 5

6.5 Mounting and Wiring for Spark Protector (Continued)



6.5 Mounting and Wiring for Spark Protector (Continued)



NOTES:
1. SPARK PROTECTOR IS SHOWN ON A 303-0029-10X PROBE. IT CAN BE INSTALLED ON OTHER COTE SHIELD PROBES IN THE SAME MANNER.
2. SPARK PROTECTOR IS MOUNTED IN CONDULET WITH LAND SIDE UP. CENTER ROD OF SENSING ELEMENT CONNECTION IS THROUGH HOLE "D". RING LUG IS ATTACHED TO GROUND SCREW (GREEN) BY D.E.
3. D.E. INSTALLED JUMPER WIRE 353-0002-047 TO JUMPER SHIELD OF PROBE TO SPARK PROTECTOR. RING LUG END GOES TO THE PROBE, SPADE LUG END GOES TO SPARK PROTECTOR PCB.
4. TEMPERATURE RANGE: -55°C TO +125°C.
5. ALL DASHED WIRES ARE FACTORY INSTALLED.

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DR. JJS 1-5-07
CK. CEN 4-9-07

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ISS.	EDO/DSR NO.	APP'D	DATE
4	12-06-106	JEN	3-13-07
3	1-01-304	JET	5-18-01
2	6-99-246	DL	8-16-99
1	4-99-303	JET	6-10-99
A	1-80-221	——	2-21-80

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MOUNTING AND WIRING FOR SPARK PROTECTOR
377-0001-016

377-0001-016-CD SHT. 1 OF 1 ISS. 4

NO. 377-0001-016-CD

6.6 Adding a Padded Capacitor

NO. 330-0009-022-CD

SHT 1 OF 3

ADDING A PADDED CAPACITOR:
THE TUNING RANGE OF EACH POINT LEVEL SWITCH IS LIMITED. LONG INSERTION LENGTH SENSING ELEMENTS OR SENSING ELEMENTS MOUNTED IN PIPES OR NEAR METAL OBJECTS MAY GENERATE ENOUGH STANDING CAPACITANCE TO EXCEED THE THE TUNING RANGE OF THE SWITCH.

THE ADDITION OF AN EXTERNAL PADDING CAPACITOR WILL INCREASE THE TUNING RANGE OF THE UNIT. TUNING RANGES AND EXAMPLES OF INCREASES CAN BE FOUND FOR EACH TYPE OF POINT LEVEL ELECRONIC SWITCH ON SHEET THREE.

WHEN A PADDING CAPACITOR IS REQUIRED, AN NPO CAPACITOR SHOULD BE ADDED TO THE PADDING TERMINALS AS INDICATED ON SHEET 2. ADDITIONAL PADS CAN BE ADDED IN PARALLEL UNIT A SATISFACTORY TUNING RANGE IS REACHED. IF A TUNING RANGE CANNOT BE REACHED, OR, IF PADDING IS IN EXCESS OF THE MAXIMUM RECOMMENDED TUNING RANGE AS INDICATED IN THE TABLE ON SHEET 3, PLEASE CONTACT THE FACTORY SERVICE DEPARTMENT.

NOTE: ON SOME TRANSMITTERS, THE PAD CAPACITOR IS SOLDERED TO TURRETS. OTHER TRANSMITTERS ATTACH THE LEADS UNDER SCREWS.

CERTIFIED
PO #
ENG
USER
DE #

ISS.	EDO/DSR NO.	APP'D	DATE
3	9-13-101	[illegible]	1-23-13
2	6-05-243	WS	7-6-05
1	7-01-303	JET	8-9-01

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SCALE NONE
UNLESS OTHERWISE STATED ALL DIMENSIONS IN INCHES (MM)

DR. JJS 9-20-13
CK. [signature]

AMETEK®
DREXELBROOK
205 KEITH VALLEY RD
HORSHAM, PA 19044-9986
215-674-1234
FAX 215-674-2731

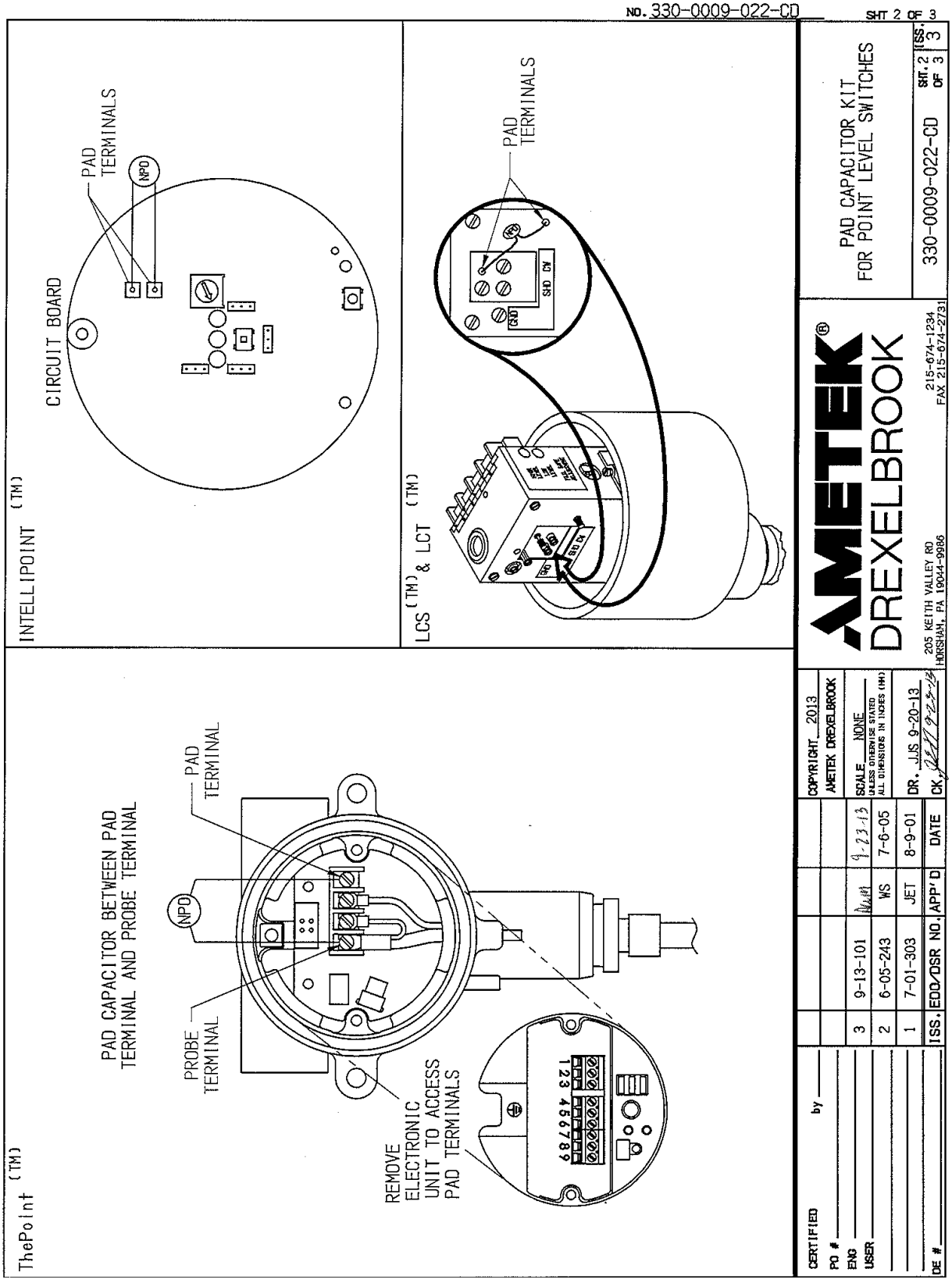
PAD CAPACITOR KIT
FOR POINT LEVEL SWITCHES

330-0009-022-CD

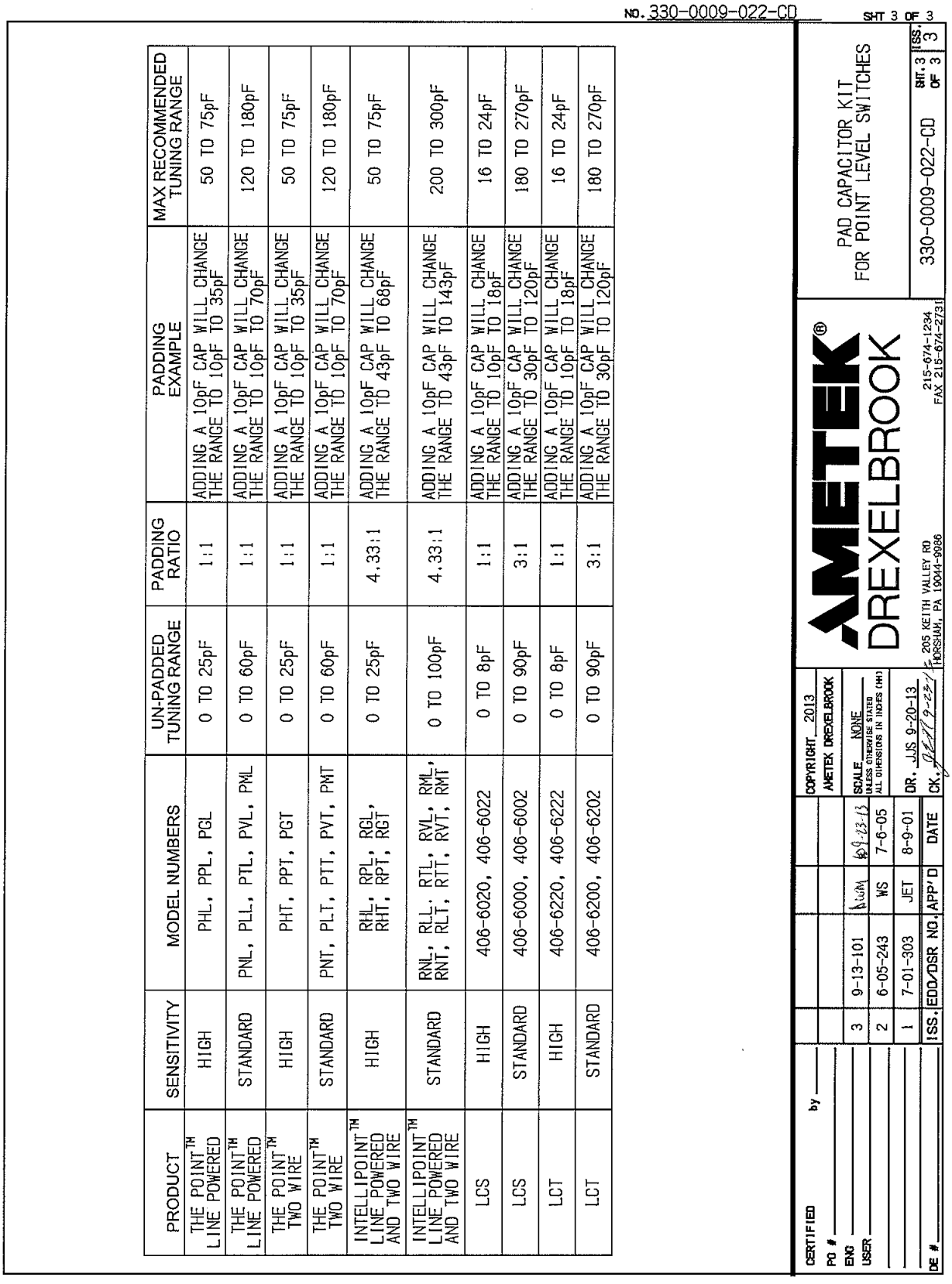
SHT. 1 OF 3

ISS. 3

6.6 Adding a Padded Capacitor (Continued)



6.6 Adding a Padded Capacitor (Continued)



NO. 330-0009-022-CD SHT 3 OF 3

PRODUCT	SENSITIVITY	MODEL NUMBERS	UN-PADDED TUNING RANGE	PADDING RATIO	PADDING EXAMPLE	MAX RECOMMENDED TUNING RANGE
THE POINT™ LINE POWERED	HIGH	PHL, PPL, PGL	0 TO 25pF	1:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 10pF TO 35pF	50 TO 75pF
THE POINT™ LINE POWERED	STANDARD	PNL, PLL, PTL, PVL, PML	0 TO 60pF	1:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 10pF TO 70pF	120 TO 180pF
THE POINT™ TWO WIRE	HIGH	PHT, PPT, PGT	0 TO 25pF	1:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 10pF TO 35pF	50 TO 75pF
THE POINT™ TWO WIRE	STANDARD	PNT, PLT, PTT, PVT, PMT	0 TO 60pF	1:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 10pF TO 70pF	120 TO 180pF
INTELLIPOINT™ LINE POWERED AND TWO WIRE	HIGH	RHL, RPL, RGL, RHT, RPT, RGT	0 TO 25pF	4.33:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 43pF TO 68pF	50 TO 75pF
INTELLIPOINT™ LINE POWERED AND TWO WIRE	STANDARD	RNL, RLL, RTL, RVL, RML, RNT, RLT, RTT, RVT, RMT	0 TO 100pF	4.33:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 43pF TO 143pF	200 TO 300pF
LCS	HIGH	406-6020, 406-6022	0 TO 8pF	1:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 10pF TO 18pF	16 TO 24pF
LCS	STANDARD	406-6000, 406-6002	0 TO 90pF	3:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 30pF TO 120pF	180 TO 270pF
LCT	HIGH	406-6220, 406-6222	0 TO 8pF	1:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 10pF TO 18pF	16 TO 24pF
LCT	STANDARD	406-6200, 406-6202	0 TO 90pF	3:1	ADDING A 10pF CAP WILL CHANGE THE RANGE TO 30pF TO 120pF	180 TO 270pF

CERTIFIED by _____ PO # _____ ENG _____ USER _____ DE # _____

ISS.	EDD/DSR NO.	APP'D	DATE
3	9-13-101	[illegible]	9-13-13
2	6-05-243	WS	7-6-05
1	7-01-303	JET	8-9-01

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DR. JJS 9-20-13 CK. [illegible] 9-23-13

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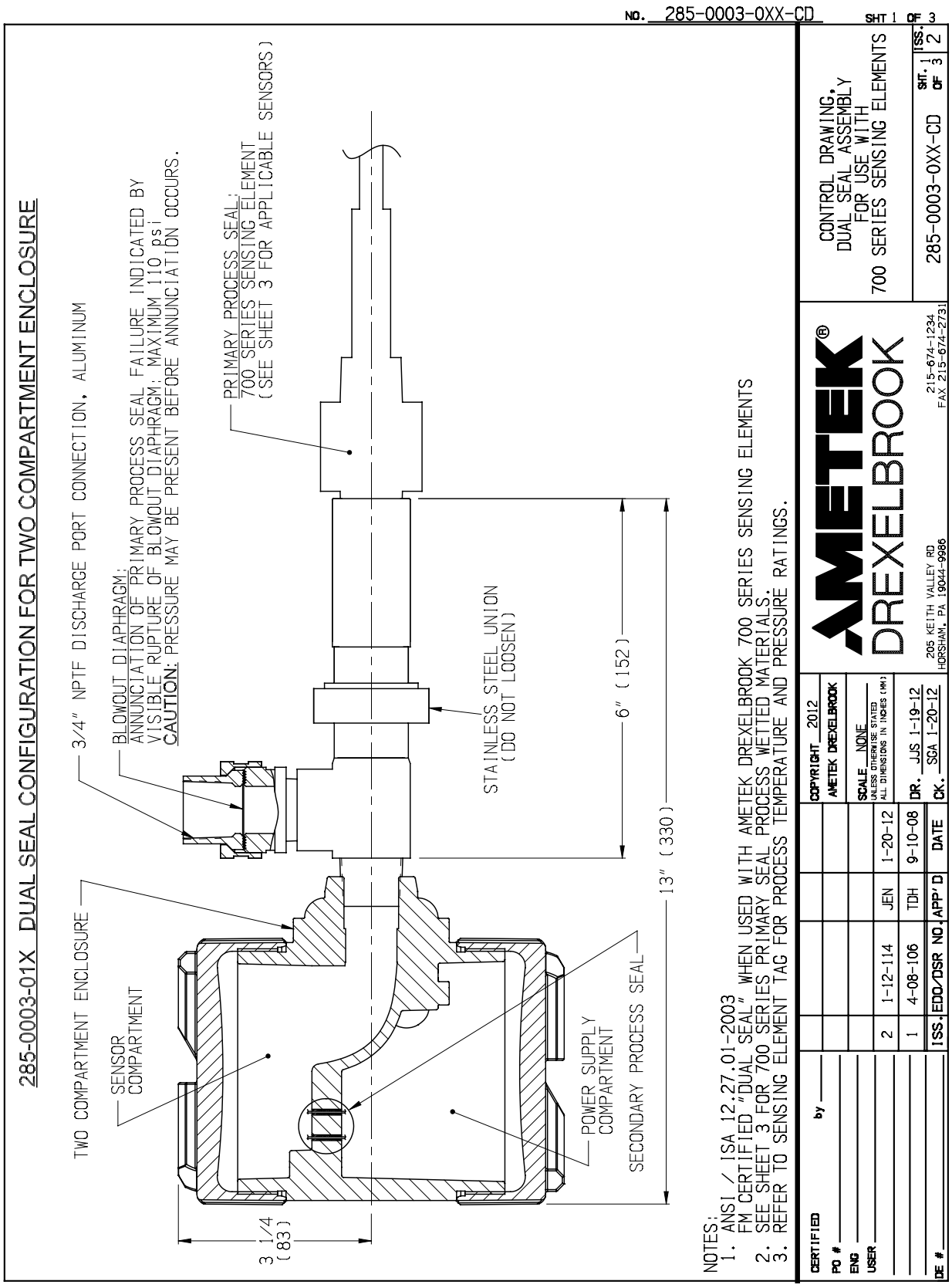
PAD CAPACITOR KIT FOR POINT LEVEL SWITCHES

330-0009-022-CD SHT. 3 OF 3 ISS. 3

6.7 Dual Seal Assembly for 700 Series Sensing Elements


NO. 285-0003-0XX-CD
SHT 1 OF 3
285-0003-01X DUAL SEAL CONFIGURATION FOR TWO COMPARTMENT ENCLOSURE
TWO COMPARTMENT ENCLOSURE
3/4" NPTF DISCHARGE PORT CONNECTION, ALUMINUM
BLOWOUT DIAPHRAGM;
ANNUNCIATION OF PRIMARY PROCESS SEAL FAILURE INDICATED BY VISIBLE RUPTURE OF BLOWOUT DIAPHRAGM; MAXIMUM 110 psi
CAUTION: PRESSURE MAY BE PRESENT BEFORE ANNUNCIATION OCCURS.
PRIMARY PROCESS SEAL; 700 SERIES SENSING ELEMENT (SEE SHEET 3 FOR APPLICABLE SENSORS)
STAINLESS STEEL UNION (DO NOT LOOSEN)
6" (152)
13" (330)
SENSOR COMPARTMENT
POWER SUPPLY COMPARTMENT
SECONDARY PROCESS SEAL
3 1/4 (83)
NOTES:
1. ANSI / ISA 12.27.01-2003 FM CERTIFIED "DUAL SEAL" WHEN USED WITH AMETEK DREXELBROOK 700 SERIES SENSING ELEMENTS
2. SEE SHEET 3 FOR 700 SERIES PRIMARY SEAL PROCESS WETTED MATERIALS.
3. REFER TO SENSING ELEMENT TAG FOR PROCESS TEMPERATURE AND PRESSURE RATINGS.
CERTIFIED by
PO #
ENG
USER
DE #
ISS. 2 1-12-114 JEN 1-20-12
ISS. 1 4-08-106 TDH 9-10-08
ISS. EDD/DSR NO. APP'D DATE
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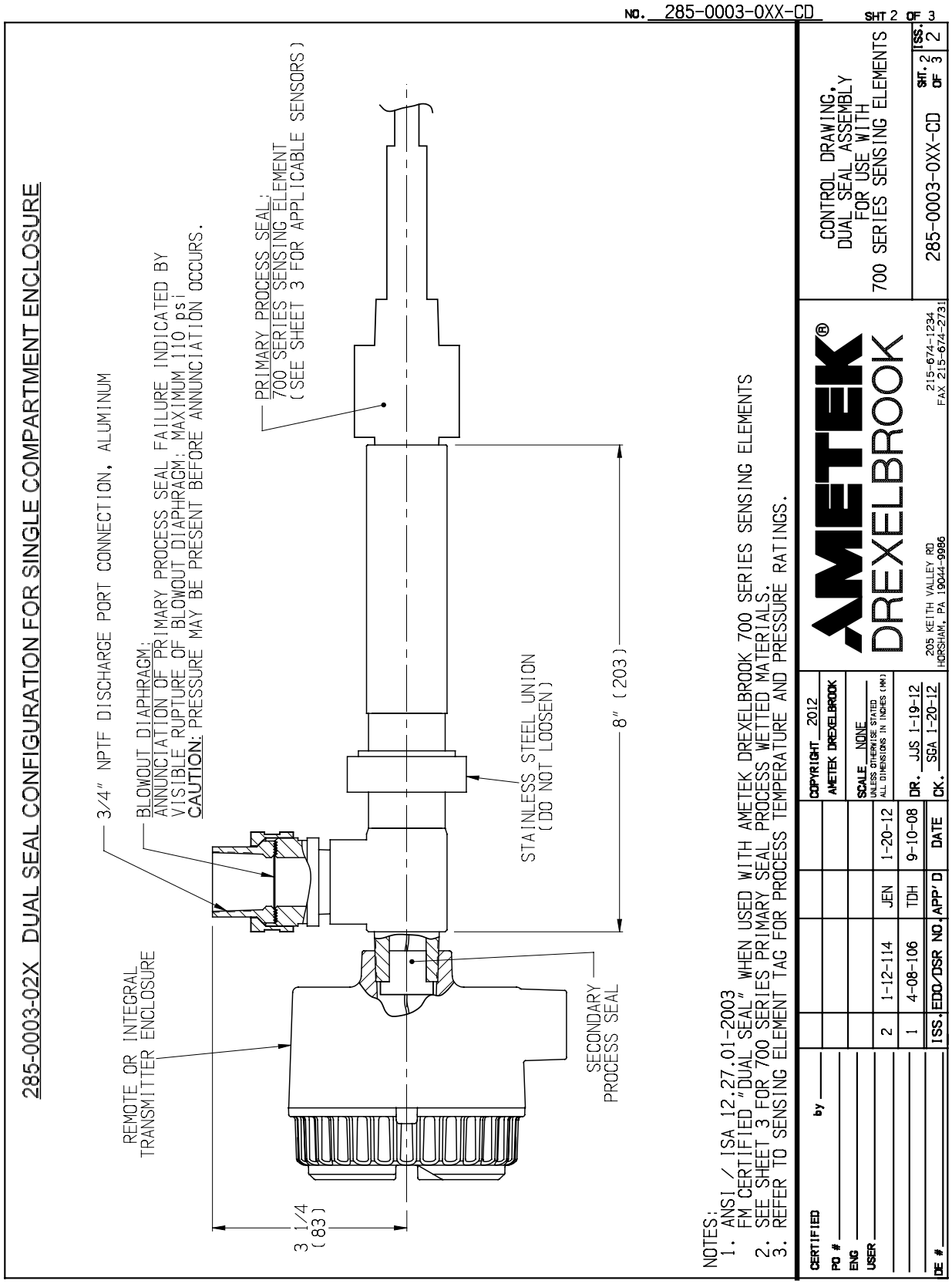
CK. SGA 1-20-12
AMETEK®
DREXELBROOK
205 KEITH VALLEY RD
HORSHAM, PA 19044-9986
215-674-1234
FAX 215-674-2731
CONTROL DRAWING, DUAL SEAL ASSEMBLY FOR USE WITH 700 SERIES SENSING ELEMENTS
285-0003-0XX-CD
SHT. 1 OF 3
ISS. 2

6.7 Dual Seal Assembly (Continued)


NO. 285-0003-0XX-CD
SHT 2 OF 3
285-0003-02X DUAL SEAL CONFIGURATION FOR SINGLE COMPARTMENT ENCLOSURE
3/4" NPTF DISCHARGE PORT CONNECTION, ALUMINUM
BLOWOUT DIAPHRAGM;
ANNUNCIATION OF PRIMARY PROCESS SEAL FAILURE INDICATED BY VISIBLE RUPTURE OF BLOWOUT DIAPHRAGM; MAXIMUM 110 psi
CAUTION: PRESSURE MAY BE PRESENT BEFORE ANNUNCIATION OCCURS.
PRIMARY PROCESS SEAL; 700 SERIES SENSING ELEMENT (SEE SHEET 3 FOR APPLICABLE SENSORS)
STAINLESS STEEL UNION (DO NOT LOOSEN)
8" (203)
REMOTE OR INTEGRAL TRANSMITTER ENCLOSURE
SECONDARY PROCESS SEAL
3 1/4 (83)
NOTES:
1. ANSI / ISA 12.27.01-2003
FM CERTIFIED "DUAL SEAL" WHEN USED WITH AMETEK DREXELBROOK 700 SERIES SENSING ELEMENTS
2. SEE SHEET 3 FOR 700 SERIES PRIMARY SEAL PROCESS WETTED MATERIALS.
3. REFER TO SENSING ELEMENT TAG FOR PROCESS TEMPERATURE AND PRESSURE RATINGS.
CERTIFIED by
PO #
ENG
USER
DE #
ISS. EDD/DSR NO. APP'D DATE
2 1-12-114 JEN 1-20-12
1 4-08-106 TDH 9-10-08
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DREXELBROOK
205 KEITH VALLEY RD
HORSHAM, PA 19044-9986
215-674-1234
FAX 215-674-2731
CONTROL DRAWING,
DUAL SEAL ASSEMBLY
FOR USE WITH
700 SERIES SENSING ELEMENTS
285-0003-0XX-CD
SHT. 2 OF 3
ISS. 2

6.7 Dual Seal Assembly (Continued)

NO. 285-0003-0XX-CD SHT 3 OF 3

SENSING ELEMENTS AVAILABLE

SENSOR MODEL #	PRIMARY SEAL WETTED MATERIALS
700-0001-022	TFE/316SS
700-0001-024	TFE/316SS
700-0001-026	TFE/316SS
700-0001-034	TFE/CS
700-0001-040	POLYETHYLENE/316SS
700-0001-044	PFA/316SS
700-0001-054	TFE/316SS
700-0001-064	TFE/316SS
700-0001-074	TFE/316SS
700-0001-344	PFA/316SS
700-0002-023	TFE/316SS
700-0002-024	TFE/316SS
700-0002-027	FEP/TFE/316SS
700-0002-028	TFE/316SS
700-0002-033	TFE/316SS
700-0002-037	PVDF/TFE/316SS
700-0002-040	UHMW PE/SILICONE/316SS
700-0002-044	PVDF/TFE/316SS

SENSOR MODEL #	PRIMARY SEAL WETTED MATERIALS
700-0002-054	FEP/TFE/316SS
700-0002-057	PVDF/TFE/316SS
700-0002-064	PVDF/TFE/316SS
700-0002-224	TFE/316SS
700-0002-321	FEP/TFE/316SS
700-0002-360	PFA/TFE/316SS
700-0005-054	PFA/TFE/316SS
700-0201-005	TFE/316SS
700-0201-025	TFE/316SS
700-0201-026	TFE/316SS
700-0201-027	TFE/316SS
700-0201-028	TFE/316SS
700-0201-035	TFE/316SS
700-0201-051	TFE/316SS
700-0201-052	TFE/316SS
700-0201-058	TFE/316SS
700-0201-059	TFE/316SS
700-0202-002	TFE/316SS

SENSOR MODEL #	PRIMARY SEAL WETTED MATERIALS
700-0202-053	TFE/316SS
700-0202-054	TFE/316SS
700-0202-056	TFE/316SS
700-1202-001	PEEK/316SS
700-1202-010	PEEK/316SS
700-1202-014	PEEK/316SS
700-1202-015	PEEK/316SS
700-1202-018	PEEK/316SS
700-1202-031	PEEK/316SS
700-1202-033	PEEK/316SS
700-1202-041	PEEK/316SS
700-1202-045	PEEK/316SS
700-1202-051	PEEK/316SS
700-1202-055	PEEK/316SS
700-1202-061	PEEK/316SS
700-1202-081	PEEK/316SS
700-9100-403	PEEK/316SS
700-9100-404	PEEK/316SS

CERTIFIED by _____
PO # _____
ENG _____
USER _____
DE # _____

ISS.	EDO/DSR NO.	APP'D	DATE
2	1-12-114	JEN	1-20-12
1	4-08-106	TDH	9-10-08

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215-674-1234
FAX 215-674-2731

CONTROL DRAWING,
DUAL SEAL ASSEMBLY
FOR USE WITH
700 SERIES SENSING ELEMENTS

285-0003-0XX-CD

SHT. 3 OF 3 ISS. 2

Appendix: A

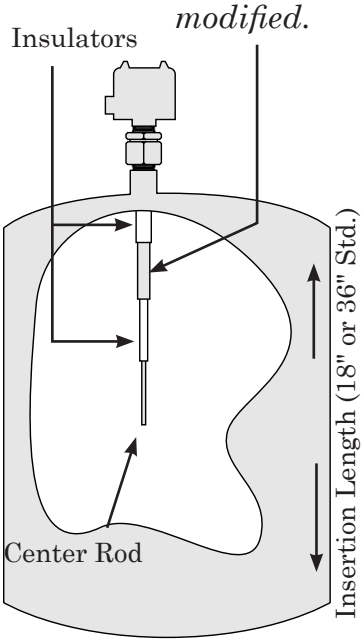
Appendix A: Shortening or Lengthening the Sensing Element

CAUTION:
The insulation length of either ***Flush Sensing Elements*** *or* ***Insulated Sensing Elements*** *can* ***NOT*** *be changed.* ***Cable Sensing Elements*** *can only be shortened. Instructions are included with each unit.*

The Need
Sometimes your application calls for probe lengths other than the standard 18-inch or longer insertion lengths supplied. Shortening the sensing element is quite simple and can be done in the field. Lengthening the sensing element, however, is more difficult because the metal rod, typically 304 SS or 316 SS, must be welded.

NOTE:
Cote-Shield element must ***NEVER*** *be modified.*

Before making any Adjustments:
1) Read the following instructions thoroughly.
2) Remove power.
3) Disconnect the electronics.
4) Protect electronics from any static discharge.
5) Protect electronics from any heat.



Shortening
The bare metal center rod of the sensing element can be shortened with a hacksaw. Be careful not to cut either of the two insulators. See Figure on this page.

In applications using conductive or water-based materials, shortening is not a problem. Leave a minimum bare metal center rod length of two (2) inches.

For dry granular materials, such as powder, sand, corn, clinker, etc., you must leave a minimum bare metal center rod length of eight (8) inches. Consult the factory before shortening beyond this point.

Lengthening
To lengthen the sensing element, an extension rod can be welded onto the end of the bare metal center rod. Make sure that the extension rod is the same metal as the sensing element.

An alternate option is to add a pipe coupling and a section of metal pipe after threading the tip of the sensing element. In this case, the metal pipe need not be identical to the metal of the sensing element.

NOTICE

Any changes to probe length after calibration requires re calibration to ensure proper operation.

CE Installation Supplement

Purpose: To provide additional information that is required to be in compliance with the CE mark of conformity and EMC Directive 2004-108-EC

Definitions:

1. I/O Sensor/Measurement/Control Port – Any port which provides level measurement, control, and/or DC power.

2. I/O AC Power – Any port which provides AC main power to the instrument.

3. Housing – Any enclosure where the sensor and transmitter can be located.

4. Non-metallic applications – any application where the sensor is not surrounded by a metallic surface.

Installation Specifics:

1. I/O Sensor/Measurement/Control Ports

   – Wiring must be twisted pair and run in conduit or an equivalent shielded environment (i.e. shielded braid, cable, etc.).

   – The shield terminations must be grounded at the source and destination ports.

   – Wiring must be run separate from AC main power and/or any signal exceeding 75 volts DC or 50 volts AC.

2. I/O AC Power Port

   – Wiring must be run either in conduit or an equivalent shielded environment (i.e. shielded braid, cable, etc.).

   – The shield terminations must be grounded at the source and destination ports.

CE Installation Supplement (Continued)

3. Remote Installations

– Sensor port must be connected to the transmitter port by one of the following means:

- 401-16-2 Probe Filter
- Coaxial cable run in conduit
- Triaxial cable

4. Housings

– All installations require the sensor and transmitter to be located in a closed shielded/metal housing (i.e. typically explosion-proof or weatherproof housings meet this requirement)

5. Sensor Type/Mounting

– In all non-metallic applications the sensor must have a full concentric shield (i.e. needs to be considered when ordering).

– The sensor/sensor condulet must be grounded locally either to a metal support structure or an equivalent earth ground.

Comments:

– Any deviation from these installation requirments should be reviewed with factory, prior to implementation

– These instructions are essential to insure conformity with specified EC directives

Form 440-0001-001 3/1/2006

TERMS AND CONDITIONS OF SALE

GENERAL: ***ALL ORDERS ARE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS. ANY ACCEPTANCE OF ANY OFFER OF BUYER FOR ANY GOODS OR SERVICES IS CONDITIONED UPON THESE TERMS AND CONDITIONS, AND SELLER OBJECTS TO ANY ADDITIONAL OR DIFFERENT TERMS PROPOSED BY BUYER IN ANY DOCUMENT, WHICH SHALL NOT BE BINDING UPON SELLER.*** No salesman or other party is authorized to bind the AMETEK DREXELBROOK Division of AMETEK, Inc. (hereinafter "Seller") by any agreement, warranty, statement, promise, or understanding not herein expressed, and no modifications shall be binding on Seller unless the same are in writing and signed by an executive officer of Seller or his or her duly authorized representative. Verbal orders shall not be executed until written notification has been received and acknowledged by Seller.

QUOTATIONS: Written quotations are valid for thirty (30) days unless otherwise stated. Verbal quotations expire the same day they are made.

PRICES: All prices and terms are subject to change without notice. Buyer-requested changes to its order ("Orders"), including those affecting the identity, scope and delivery of the goods or services, must be documented in writing and are subject to Seller's prior approval and adjustments in price, schedule and other affected terms and conditions. Orders requiring certified test data in excess of commercial requirements, are subject to a special charge.

ORDER ACCEPTANCE: All Orders are subject to final approval and acceptance by Seller at its office located at 205 Keith Valley Road, Horsham, Pennsylvania 19044.

TERMS OF PAYMENT: Seller's standard terms of payment for Buyers who qualify for credit are net thirty (30) days from date of invoice. All invoices must be paid in United States dollars.

CREDIT: Seller reserves the right at any time to revoke any credit extended to Buyer or otherwise modify terms of payment if Buyer fails to pay for any shipments when due or if in Seller's opinion there is a material adverse change in Buyer's financial condition. Seller may, at its option, cancel any accepted Order if Buyer fails to pay any invoices when due.

DELIVERY: Shipments are F.O.B place of manufacture ("Shipping Point") and the Buyer shall pay all freight, transportation, shipping, duties, fees, handling, insurance, storage, demurrage, or similar charges from Shipping Point. Delivery of goods to common carrier shall constitute delivery and passing of title to the Buyer, and all risk of loss or damage in transit shall be borne by Buyer. Any claims or losses for damage or destruction after such delivery shall be the responsibility of Buyer.

Seller reserves the right to make delivery in installments which shall be separately invoiced and paid for when due, without regard to subsequent deliveries. Delay in delivery of any installment shall not relieve Buyer of its obligation to accept remaining deliveries.

Acknowledged shipping dates are approximate only and based on prompt receipt of all necessary information from Buyer and Buyer's compliance with terms of payment.

TAXES: All sales, excise and similar taxes which Seller may be required to pay or collect with respect to the goods and/or services covered by any Order, shall be for the account of the Buyer except as otherwise provided by law or unless specifically stated otherwise by Seller in writing.

TERMINATION AND HOLD ORDERS: No Order may be terminated by Buyer except upon written request by Buyer and approval by Seller, and if said request is approved by Seller, under the following conditions: (1) Buyer agrees to accept delivery of all of the units completed by Seller through the workday on which Seller receives the written termination request; (2) Buyer agrees to pay to Seller all direct costs and expenses applicable to the portion of the Order that is incomplete.

WARRANTY:

A. Hardware: Seller warrants its goods against defects in materials and workmanship under normal use and service for one (1) year from the date of invoice.

B. Software and Firmware: Unless otherwise specified, Seller warrants for a period of one (1) year from date of invoice that standard software or firmware, when used with Seller specified hardware, shall perform in accordance with Seller's published specifications. Seller makes no representation or warranty, expressed or implied, that the operation of the software or firmware shall be uninterrupted or error-free, or that functions contained therein shall meet or satisfy the Buyer's intended use or requirements.

C. Services: Seller warrants that services, including engineering and custom application, whether provided on a fixed cost or time and material basis, shall be performed in accordance with generally accepted industry practices.

D. Remedies: Seller's liability under this section is restricted to replacing, repairing, or issuing credit (at Seller's option) for any returned goods and only under the following conditions: (1) Seller must be promptly notified, in writing, as soon as possible after the defects have been noted by the Buyer, but not later than (1) year from date of invoice from Seller; (2) The defective goods are to be returned to the place of manufacture, shipping charges prepaid by the Buyer; (3) Seller's inspection shall disclose to its satisfaction that the goods were defective in materials or workmanship at the time of shipment; (4) Any warranty service (consisting of time, travel and expenses related to such services) performed other than at Seller's factory, shall be at Buyer's expense.

E. Repaired/Reconditioned Goods: As to out-of-warranty goods which Seller has repaired or reconditioned, Seller warrants for a period of sixty (60) days from date of its invoice only new components replaced in the most recent repair/reconditioning.

F. Returns and Adjustments: No goods may be returned unless authorized in advance by Seller and then only upon such conditions to which Seller may agree. Buyer must obtain an RMA (Return Material Authorization) number from Seller prior to any return shipment and such RMA number must appear on the shipping label and packing slip. Buyer shall be responsible for the returned goods until such time as Seller receives the same at its plant and for all charges for packing, inspection, shipping, transportation, or insurance associated with returned goods. In the event that credit for returned goods is granted, it shall be at the lesser of the then current prices or the original purchase price. Claims for shortage or incorrect material must be made within five (5) days after receipt of shipment.

ALL OTHER WARRANTIES, FOR ANY OF SELLER'S GOODS OR SERVICES, WHETHER ORAL, WRITTEN, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING WITHOUT LIMITATION ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR PURPOSE ARE EXCLUDED.

INTELLECTUAL PROPERTY: Seller's sale of goods or provision of related documentation or other materials to Buyer shall not transfer any intellectual property rights to Buyer unless Seller specifically agrees to do so in writing. Seller shall retain ownership of all applicable patents, trademarks, copyrights and other intellectual property rights. Buyer shall not use, copy or transfer any such items in violation of Seller's intellectual property rights or applicable law, or for any purposes other than that for which the items were furnished.

Seller shall defend any lawsuit brought against the Buyer based on a claim that the design or construction of the goods sold hereunder by Seller infringe any United States or Canadian Patent, Copyright or Mask Work Registration, provided that Buyer promptly notifies Seller of such claim in writing and further provided that, at Seller's expense, (1) Buyer gives Seller the sole right to defend or control the defense of the suit or proceeding, including settlement, and (2) Buyer provides all necessary information and assistance for that defense. In the event of a charge of infringement, Seller's obligation under the agreement shall be fulfilled if Seller, at its option and expense, either (i) settles such claim; (ii) procures for Buyer the right to continue using such goods; (iii) replaces or modifies goods to avoid infringement; or (iv) accepts the return of any infringing goods and refunds their purchase price; or (iv) defends against such claim.

If Buyer furnishes specifications or designs to Seller, the obligations of Seller set forth above shall not apply to goods made by Seller using such specifications or designs, and Buyer shall defend, indemnify and hold Seller harmless against any third party claims for infringement which arise out of Seller's use of specifications or designs furnished by Buyer.

SOFTWARE LICENSE: If goods purchased hereunder include software ("Software"), Buyer may use the Software only as part of the goods. Buyer may not use, copy, or transfer any of the Software except as may be permitted under the applicable License Agreement provided with the goods. Buyer's right to use, copy or transfer the Software shall terminate upon termination of Buyer's right to use the goods.

PACKAGING/WEIGHTS AND DIMENSIONS: Buyer specified packing or marking may be subject to additional charges not otherwise included in the price of the goods. Published weights and dimensions are estimates or approximate only and are not warranted.

FORCE MAJEURE: Seller shall not be responsible for delays in delivery or any failure to deliver due to causes beyond Seller's control, including but not limited to the following items: acts of God, war, terrorism, mobilization, civil commotion, riots, embargoes, domestic or foreign governmental regulations or orders, governmental priorities, port congestion, acts of the Buyer, its agents or employees, fires, floods, strikes, lockouts and other labor difficulties, shortages of or inability to obtain shipping space or transportation, inability to secure fuel, supplies or power at current prices or on account of shortages thereof, or due to limitations imposed by the extent of availability of Seller's normal manufacturing facilities.

If a delay excused per the above extends for more than ninety (90) days and the parties have not agreed upon a revised basis for continuing providing the goods or services at the end of the delay, including adjustment of the price, then Buyer, upon thirty (30) days' prior written notice to Seller may terminate the Order with respect to the unexecuted portion of the goods or services, whereupon Buyer shall promptly pay Seller its reasonable termination charges upon submission of Seller's invoices thereof.

LIMITATION OF LIABILITY: Seller's liability for any claim of any kind, except infringement of intellectual property rights, shall not exceed the purchase price of any goods or services which give rise to the claim. ***SELLER SHALL IN NO EVENT BE LIABLE FOR BUYER'S MANUFACTURING COSTS, LOST PROFITS, LOSS OF USE OF THE GOODS OR SERVICES, COST OF CAPITAL, COST OF SUBSTITUTE GOODS, FACILITIES, SERVICES OR REPLACEMENT POWER, DOWNTIME COSTS, CLAIMS OF BUYER'S CUSTOMERS FOR DAMAGES, OR OTHER SPECIAL, PROXIMATE, INCIDENTAL, INDIRECT, EXEMPLARY OR CONSEQUENTIAL DAMAGES.*** Any action against Seller must be brought within eighteen (18) months after the cause of action accrues. These disclaimers and limitations of liability shall apply regardless of the form of action, whether in contract, tort or otherwise, and further shall extend to the benefit of Seller's vendors, appointed distributors and other authorized resellers as third-party beneficiaries.

PROHIBITION FOR HAZARDOUS USE: Goods sold hereunder generally are not intended for application in and shall not be used by Buyer in the construction or operation of a nuclear installation or in connection with the use or handling of nuclear material, or for any hazardous activity or critical application, where failure of a single component could cause substantial harm to persons or property, unless the goods have been specifically approved for such a use or application. Seller disclaims all liability for any loss or damage resulting from such unauthorized use and Buyer shall defend, indemnify and hold harmless the Seller against any such liability, whether as a result of breach of contract, warranty, tort (regardless of the degree of fault or negligence), strict liability or otherwise.

EXPORT CONTROL: Buyer shall comply with all export control laws and regulations of the United States, and all sales hereunder are subject to those laws and regulations. Seller shall not be named as shipper or exporter of record for any goods sold hereunder unless specifically agreed to in writing by Seller. At Seller's request, Buyer shall furnish Seller with end-use and end-user information to determine export license applicability. Buyer warrants, in accordance with U.S. Export Law, that goods sold hereunder shall not be destined for facilities or activities involving nuclear, chemical or biological weapons, or related missile delivery systems in named prohibited regions or countries.

GOVERNING LAW: Seller intends to comply with all laws applicable to its performance under any order. All matters relating to interpretation and effect of these terms and any authorized changes, modifications or amendments thereto shall be governed by the laws of the Commonwealth of Pennsylvania. No government contract regulations or clauses shall apply to the goods or services, this agreement, or act to bind Seller unless specifically agreed to by Seller in writing.

NON-WAIVER BY SELLER: Waiver by Seller of a breach of any of these terms and conditions shall not be construed as a waiver of any other breach.

SEVERABILITY AND ENTIRE AGREEMENT: If any provision of these terms and conditions is unenforceable, the remaining terms shall nonetheless continue in full force and effect. This writing, together with any other terms and conditions Seller specifically agrees to in writing, constitutes the entire terms and conditions of sale between Buyer and Seller and supercedes any and all prior discussions, and negotiations on its subject matter.

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